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No 1

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A FORECAST.

THE AGRICULTURAL GAZETTE comes to you, in this the first number of a new year, in a somewhat altered and, we hope, improved form. The changes made permit a better presentation of material and will facilitate binding. These mechanical features are not, however, of first importance.

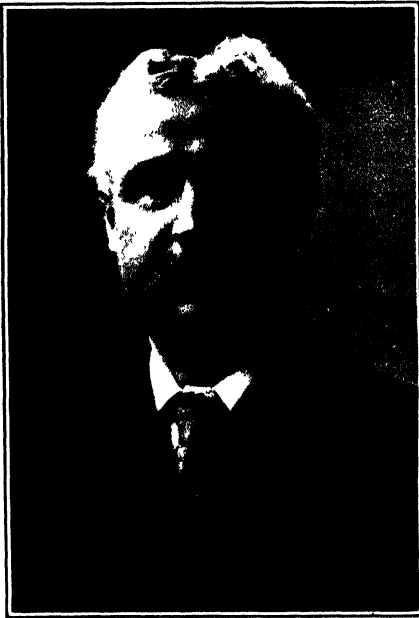
On the assumption that education is the motive power of progress, the GAZETTE will give greater attention to the advancement of rural science. Officials engaged in agricultural instruction are therefore, invited to join the officials of departments of agriculture in passing along the good things that come before them in their work both as to methods and results.

The symposium feature that characterized the first volume, almost from the beginning, will be continued during 1915. By thus bringing together the findings of investigators, the methods of demonstrators and other information on subjects of vital importance in every province, and by laying them before all of these the standard of Canadian Agriculture should be uniformly lifted to a new plain.

The AGRICULTURAL GAZETTE provides a medium for spreading the gospel of better methods to the great body of officials and workers in the departments of public service for agriculture and domestic economy, in the offices, laboratories, research departments, educational institutions and extension headquarters throughout the land.

AGRICULTURAL CONFERENCES.

THE call of the Mother Country for men and food has inspired citizens of the Empire to effort as never before. Since the outbreak of the war governments, municipalities, corporations and individuals over the whole Dominion have been



GEO. F. O'HALLORAN, B.A., B.C.L.
Deputy Minister of Agriculture for Canada

devising means for increasing the production of foods. The agricultural departments of the several provinces, through the agency of the press, district representatives or field agents and in other ways

have sought to encourage agricultural expansion. The federal department of agriculture has put forth special efforts in the same direction. Early in the autumn specific instructions for improving the crops in 1915 were widely distributed over Canada. This is to be followed by a series of public conferences between well informed experts and the producers themselves. The Hon. Martin Burrell, Minister of Agriculture, believing that increased production rests with the farmers themselves is taking this means of informing them of the needs of the hour and of the future

The plan involves series of meetings to be addressed by officials of the Dominion and Provincial. Departments of Agriculture and other authorities, who will discuss with practical men, in addition to the technical matters connected with farming, such economic questions as, markets, prices, the effect of war on demand, the effect of shortage of labour or supply, and also effective means of securing and utilizing more and better farm hands.

Already this continent is responding to increased demands for foods. That the demands will continue, and greatly increase is believed by every student of affairs, that a knowledge of the situation will stimulate producers to do their part is equally certain. By doing so they will not only perform a valued service to the Empire but reap the advantage of greater prosperity.

THE INTERNATIONAL INSTITUTE OF AGRICULTURE AND THE WAR.

BY T. K. DOHERTY, LL.B., COMMISSIONER FOR CANADA.

OF historic importance were the meetings of the Permanent Committee of the International Institute of Agriculture which opened at the Institute Palace, Rome, on the 31st October last. With eight European countries waging a war of unparalleled carnage and bitterness, involving more or less every continent, such meetings were only possible because a new era has opened in international co-operation, a period of human progress, a transition to that great institution prophetically described by Tennyson as:

The parliament of man, the federation of
the world.

Where the common sense of most shall
hold a fretful realm in awe
And the kindly earth shall slumber wrapt
in universal law.

Thirty-seven of the adhering states were represented, including all the belligerent countries except Turkey. Mr. Louis Bauwens replaced Mr. Bolle, who for many years had represented Belgium but on this occasion was unable to leave Brussels. Sir James Wilson, delegate for Great Britain and the Dominion, Mr. Louis Dop, delegate for France and Vice-President of the Institute, who had recently fought in the battle of the Marne, and Mr. Zabiello, of Russia took their customary seats nearby Dr. Mueller, of Germany, and Mr. de Miklos, of Hungary. The personal relations between the delegates are reported to have been quite cordial and satisfactory, and this fact is apparent from the printed proceedings.

It is not unlikely that these amicable relations were largely inspired by the powerful personality

and tact of the President, Marquis Cappelli. In his opening address, he commemorated the lamented dead who had helped to create and develop the Institute: King Charles of Roumania, the Marquis of San Giuliano, Italian Minister of Foreign Affairs, Hon. Signor Fusinato, Minister of State of Italy, and Dr. Saenz Pena, who was delegate of Argentina to the Institute before he became President of the Republic. He referred in dignified language to his grief "at the catastrophe which has befallen Europe; the difficult and noble mission the Institute had to perform in assisting the states to repair the immense losses produced by the war when ended."

From various sides and from several Governments he had received "hearty encouragement to continue the work, and was grateful to them and all the delegates, especially those of the belligerent countries, for returning to resume their work of peace and progress while the cannon is still roaring: a most hopeful sign of our civilization; an affirmation of human solidarity in spite of the terrible events which seem to deny it."

The President appealed to the delegates to "strive to accomplish the task entrusted to them, and assist each other fraternally with counsel and advice." "This is a duty," he added, "the performance of which will be all the more meritorious on your part, delegates of the belligerent countries. In conclusion I grieve to have to say that of the 18 employees of the Institute, belonging to the belligerent countries, and called to the colours, two have fallen, a German, Dr. Haag, and a French-

man, Mr. Doisy-Pelletier. We have also been informed that Dr. Saulnier has been wounded in battle, but is now recovering."

It became apparent from the report of Professor Lorenzoni, the General Secretary, that considerable difficulty had arisen from the absence of so many members of the staff, comprising the Chief of a Branch, two Division Chiefs, and an Editor-in-Chief. Besides, the Institute had been deprived of many former sources of information, such as official communications, and important periodicals which were no longer being published or could not reach the Institute. Notwithstanding these difficulties, the staff have been able to publish the three monthly bulletins as usual, although there has been a little delay in the issue of some of them, and the data concerning crops and agricultural trade have been, and still are, incomplete.

Assurance was given that progress would be continued in the study of the questions which are being prepared for discussion at the next General Assembly, such as the unification of the systems of collecting agricultural statistics - the collection of statistics regarding milk and its principal products - visible and invisible stocks - the consumption and prices of meat - chemical manures - farming accounts - protection against locusts and maritime freights for the conveyance of agricultural products.

Among the first resolutions to be adopted by the Committee was one to secure authorization from the adhering Governments to postpone, until the close of the war, the meet-

ings of the General Assembly, which were to have been held in May next; and another, the proposal of Mr. Lubin, of the United States, to consider the advisability of holding an International Convention for the purpose of bringing about the establishment of an International Commerce Commission having consultative, deliberative, and advisory powers with reference to ocean trade and ocean freights, a proposal which had formed the subject of a joint resolution recently passed by the United States Senate and the House of Representatives.

At the second meeting of the Permanent Committee, on November 7th, the Vice-President and the members of the four sub-committees were re-elected for the next three years without discussion. A report submitted by Sir James Wilson, on the Third International Congress of Tropical Agriculture, held in London last June, was referred to the Office for report as to what could be usefully done to establish co-operation between the Institute and the Association which arranges for these Congresses, with the object of securing joint action between the two bodies.

With reference to the treatment of the members of the staff at the front, it was decided to place them on a footing similar to that provided by the regulations in case of illness; the Institute allowing them full pay for the first six months and half pay for four months more. The Institute was also willing to make a special grant to the families of any of its employees who may lose their lives and who may leave those dependent upon them in straitened circumstances.

PART I.

Dominion Department of Agriculture.

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED.

THE DOMINION EXPERIMENTAL FARMS.

THE DIVISION OF HORTICULTURE.

FIRE POTS AS A PROTECTION AGAINST FROST.

BY M. B. DAVIS, B.S.A., ASSISTANT TO THE DOMINION HORTICULTURIST.

THE question of protection against late spring frosts is one that has had the attention of nearly every grower of fruits and vegetables which are subject to its ravages.

Of the various methods devised only one seems worthy of consideration and that is the method of raising the temperature of the surrounding air by the use of orchard heaters or fire pots.

TYPE OF HEATER USED.

Although there are many types of heaters on the market, only one was used at the Central Farm owing to the inability of several manufacturers to supply their heaters at short notice. The type used is known as the "Competition" heater and is one of the simplest forms on the market. The accompanying illustration will explain its simple construction. It has the great advantage of being able to be stored in a comparatively small space and furthermore there is no mechanical device to get out of order. Referring to the illustration it will be noticed that the heater in question consists of an ordinary pail of sheet iron with perforations around the top

to allow of a draught of air; there is also a perforated rim which fits into the heater to assist in this draught. The heaters are supplied with a cover to be used during bad weather. On the right of the illustration will be noticed a heater with a reflector attached. This reflector was attached for the purpose of radiating the heat downwards, and was designed for use with ground crops. The theory was, that by radiating the heat toward the ground it would be easier to raise the ground temperature, but this did not work out in practice as practically no effect was felt at a greater distance than three or four feet from the heater. Further more, when used on strawberries the heat in the vicinity of the heater was so great on the ground that the plants were invariably burned so that from the data on hand it would appear that the reflector is not a practical means of controlling radiation.

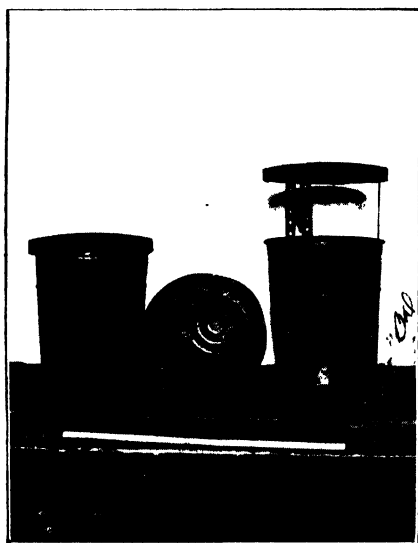
FUEL

The fuel used in these heaters is what is known as fuel oil and can be procured from any of the leading oil companies of Canada. It has a specific gravity of about .85 and a

flashing point of 275. In tank car lots it may be purchased at six cents per gallon or less, F.O.B. Ottawa, and in barrel lots at 11 cents F.O.B.

NUMBER OF HEATERS PER ACRE.

The number of heaters required per acre will depend upon the degree of frost to combat. For ordinary purposes, such as a frost of 5 or 6 degrees, 100 heaters per acre should be ample, as this number of heaters has been found sufficient to raise the



THE "COMPETITION" HEATER.

temperature of the surrounding air 8 degrees on a very bad night, and should therefore raise it 10 degrees on the average frosty night of 5 or 6 degrees below freezing, a great deal depending upon the wind. If 10 degrees of frost or over are anticipated it would be better to increase the number of heaters, even though it was not necessary to light them all.

METHOD OF DISTRIBUTING THE HEATERS.

The method of distributing the heaters throughout the area to be heated will depend on the quarter

from which the wind is blowing. Generally on our frosty nights the wind comes from between the north and west, so that in this case there should be more heaters on the north and west sides than on the other sides. It will be readily understood why this is done, as the wind could blow the heat over the rest of the area. If on the other hand the wind was from the east and the larger number of heaters were on the west side of the area the heat would be driven from the western side to a point outside of the area to be heated. It is not a very large task to shift the pots just before lighting to suit the night in question but it is very important to have the larger number of pots well to the windward of the area requiring heating.

The pots should be filled and placed in the field some time before frost is expected so that everything will be in readiness at a moments notice. As a good strong cover is supplied with each heater there will be no danger of rain getting in to dilute the oil, if the heaters are kept covered while not in use.

LIGHTING AND CARE OF HEATERS WHILE IN USE.

As the oil used in these heaters is very crude and unrefined it has a very high flashing point or in other words will not ignite readily. Hence it is necessary to employ some other means of lighting the pots than by merely applying a lighted match or torch. If gasoline, which is a very combustible product, is applied to the surface of the liquid in the heaters, and a lighted match or torch is then applied, the gasoline will ignite and burn and by the time it has burned out it will have raised the temperature of the oil to its flashing point and ignition will take place. In experimenting at this station it has been found that only a few drops of gasoline are necessary for this purpose, two quarts is ample for one acre or 100 heaters.

In lighting up the method employed is somewhat as follows: first, have all the covers removed from the heaters, which will take only a few minutes. After the covers have been removed one man starts with a bottle of gasoline and drops a few drops of the gasoline in the heaters. He is immediately followed by a man with a lighted torch who applies the torch to the surface of the pot. In this manner the task of lighting is carried out very quickly. One thing to remember is, do not apply the gasoline until just before ready to light, for it is so volatile that the small amount used will readily evaporate from the comparatively large surface. The torches used may be made out of any stick with bagging wrapped around and tied with wire, then soaked in gasoline, or kerosene. Another point worthy of mention is that kerosene or coal oil will not take the place of the gasoline in lighting up, as kerosene will not light quickly and is consequently of no use for that purpose.

REFILLING.

Whether or not the heaters require to be refilled while a frost is in duration will depend upon the length of the frost period. The heaters hold six imperial quarts and will burn anywhere from six to nine hours. Ordinarily this is ample to carry a crop through the worst night we would expect in spring, as at that time of year frosts only last about four hours. If, however, it becomes necessary to refill, it can be safely carried out without extinguishing the flame. The oil is of such non-combustible nature that it will not explode or cause any harm to the operator when poured into a burning heater. At first there will be a sputtering, due to the cold oil coming in contact with the hot pot, but if a long spouted can is used there need be no danger. It is not advisable, however, to apply the oil from an ordinary bucket, for in this operation

the operator may have to put his face too close to the heater and thus may receive burns from the hot sputtering oil. Allowance should always be made for refilling and barrels of oil should be distributed throughout the area to be heated so as to facilitate the operation of refilling as much as possible. With the oil distributed in barrels at different points, two men can, with a ten quart long spouted can, care for from two to three hundred heaters on the worst night and keep them properly filled.

EXTINGUISHING.

The fire or flame in the heaters may readily be extinguished by simply placing the cover on the heater. The flame may smoulder for a few minutes but will soon be extinguished after the cover is placed in position.

SOME RESULTS FROM USING FIRE POTS.

As no frosts were experienced in the late spring it was decided to test out these orchard heaters in the early fall. On the night of September 28, the heaters were lighted. On this night the frost came very early and the thermometer had fallen to 32 degrees before there was any person in the vicinity of the alarm. The heaters were lighted however, at 8.35 and at this time the temperature was 30° F. on the ground and 32° F. fourteen inches above the ground. It might be added, that thermometers were placed, both inside and outside of the heated area. These thermometers were placed one on the ground and the other fourteen inches above the ground, four thermometers being used for the two areas. These had all been previously tested and corrected. The thermometers inside the heated area were placed as far from any of the heaters it was possible to place them. Readings both inside and out were taken at different intervals through-

out the night, and the results are here recorded.

Besides depending on the thermometers, young tomato plants from the greenhouse were placed, some inside and some outside the heated area. Next day it was observed that those plants which had been inside the heated area were not injured at all, while those plants which had been outside were entirely killed by frost. As before stated, the heaters were lighted at 8.35 p.m. when the ground temperature was 30° F. and the temperature fourteen inches above the ground was 32° F. At 9.05 p.m. just half an hour after lighting, the temperature inside the heated area had risen to 32° F. on the ground, 34° F. fourteen inches

heated area and that such a frost as this rarely occurs if ever during the spring. It is also well to note that at 14 inches above the ground the temperature inside the heated area was 34° F. as against 28° F. for the unheated area. This record coupled with the fact that the tomatoes in the heated area came through uninjured is fairly good evidence that the heaters are a practical method of fighting frost.

COST.

Whether or not it is an economical method will depend to a very large extent on the margin of profit of the crop in question, although it must be borne in mind that a frost may mean the difference between absolute

TEMPERATURES INSIDE AND OUTSIDE HEATED AREA.

	9.05 P.M.	10.30 P.M.	1.30 A.M.	3 A.M.	5.45 A.M.
	Gr. & 14"	Gr. & 14"	Gr. & 14"	Gr. & 14"	Gr. & 14"
Heated area	32 34	33 36	32 34	31 34	32 34
Outside area	28 30	32 34	28 30	24 28	26 29

NOTE: Gr indicates temperature at ground.
14" " " 14 inches above ground.

above the ground, while the temperature outside was 28° F. on the ground and 30° F. fourteen inches above the ground. This shows a rise of 4 degrees in temperature in one half hour due to the effect of the heaters.

The above table gives the temperature both inside and outside the heated area at different hours during the night.

It will be noted that until 1.30 a.m. the heated area had a minimum temperature of 32° F. against a minimum temperature of 28° F. for the outside area. After 1.30 the temperature on the ground inside the heated area dropped to 31° F. or 1 degree below frost, but it must be remembered that this was some 7° higher than outside the

failure and success and even if the cost of saving the crop eats up the profit, the loss may not be as great as it otherwise would be, had it been allowed to be totally destroyed by frost.

The following estimate of plant and operating expenses seems fair:

Cost of 100 heaters at 31 cents, including duty and freight charges	\$31 00
One frost alarm thermometer	30 00
Total for plant	\$61 00
Operating expenses per acre:—	
Placing and filling 100 heaters	\$ 1.25
Tending to 100 heaters, 5 hours, 2 men at 20 cents per hour each	2 00
Fuel (maximum consumption, see below)	12 50
Gasoline for lighting	20
Cost per acre	\$15.95

NOTE:—The amount of fuel used may vary from four quarts per 4½ hours to four quarts per 7 hours, or in cost from \$1.60 to \$2.50 per acre per hour, depending on the night in question. The frost alarm will also serve for any number of acres, so the cost of plant per acre would gradually be reduced.

A FROST ALARM SYSTEM.

Many nights during early spring threaten frosts which do not actually arrive or if they do, only come in local areas, and it is very difficult for any person to foretell whether a frost will actually come or not, so that the only way to be on the safe side would be for the grower to sit up and keep watch. As this is a very arduous task it is quite essential that a frost fighting equipment be supplemented by the addition of a frost alarm. The frost alarm thermometers are very accurate and reliable and are very simple in construction. The working is very simple; the thermometer is placed on a post a distance of about 6 or 8 inches from the ground and the battery box and bell are placed

in the caretaker's bedroom. The thermometer should be placed in a cold part of the farm where frosts generally strike, and it should not be more than 900 feet from the battery box. The two wires are then led from the battery to the thermometer.

The alarm thermometer is a specially made instrument with a fine platinum wire fused into the bore of the tube connecting with the mercury column at 32° F., or at any other one permanent point desired. A second wire, touching the mercury at a point below the other, completes a circuit which is broken the instant the mercury drops below the designated danger point, — the permanent point referred to in the foregoing. A non-sparking special relay battery attachment causes a bell to ring at practically any distance from the thermometer itself, the moment the circuit is broken. Until the alarm rings, the danger is not imminent and all unnecessary expense may be spared.

THE DIVISION OF ANIMAL HUSBANDRY.

A SERIES OF EXPERIMENTS.

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN.

THE new cow barn at the Central Experimental Farm is now practically completed, and the large amount of routine and experimental work has been started therein. The outstanding experiment in this barn for the coming year is the careful testing of the Burrell-Lawrence-Kennedy and the Sharples milking machines against good hand-milking, from the viewpoints of their commercial importance, bacteriological results upon the milk, and pathological influence upon the cows. Aside from this work, which is well under way, there is also being

conducted a series of feeding experiments to ascertain the value of molasses and molasses meals in replacing succulent forages such as mangels, turnips, and corn ensilage. This work is a continuation of the large amount of feeding experiments with molasses and molasses meals which has been conducted during the past two years.

Another very interesting line of experimental work being conducted is that of the comparing of various cream and milk substitutes in the feeding of calves, and also the comparing of different meals for calves of somewhat older age. The new

barn lends itself particularly well to this line of work and it is hoped that in another year or more conclusive results along the lines of calf feeding will be obtained.

In another dairy barn specially provided for dairy cattle feeding experiments, a series of tests is being conducted to show the possibility of economically using elevator screenings in varying proportions as a ration for milking cows. This work is well under way and is promising valuable and interesting results.

A somewhat similar line of work on a more extensive scale is being conducted in the experimental feeding of lambs, where over one hundred lambs are being fed on different elevator by-products.

Another somewhat similar line of

experiments is also being conducted in the feeding of pigs for market. This, too, promises very valuable and exceedingly interesting results.

Another line of experimental work is being conducted in the feeding of brood sows, in which are being tried several foods including a slaughter house by-product, namely, tankage. There is also being tried the hopper grinder for brood sows wintered in the cabins outdoors.

All classes of breeding stock are in excellent condition and the regular breeding operations are being conducted as usual. The dairy cattle grading experiment which is being conducted on the Central and many of the Branch Farms is continuing to give slow but satisfactory results and continues to show progress.

THE ENTOMOLOGICAL BRANCH.

SPRAYING EXPERIMENTS IN NOVA SCOTIA AND THE CONTROL OF THE BUDMOTH OF THE APPLE.

DURING the last three years Mr. G. E. Sanders, Field Officer in charge of the Dominion Entomological Laboratory at Bridgetown, N.S., has been investigating the life-histories of the Budmoth and Green Fruit-worms and studying methods of control. The Budmoth constitutes the most serious insect pest of the apple orchards in Nova Scotia, causing more loss probably than all other insects combined. This investigation is now practically concluded and not only has the best method of combatting them been determined but the educational and demonstration work that has been carried on has resulted in a very encouraging increase in spraying with significant results. A publication giving the results of this investigation is in course of preparation; in the meantime it is desirable to state briefly some of the conclusions.

Most of the spraying experiments were carried out in the orchard of Mr. R. S. Eaton at Kentville, N.S. Spraying work under the Branch's direction was also carried out in other orchards. At Kentville, the Budmoth infestation in the check (unsprayed) plots was: 20.5 per cent in 1912, 47.4 per cent in 1913 and 59.5 per cent in 1914. The spray mixtures varied and were put on in different series as regards time of application. The best results were obtained with two sprays, the first applied three days before the blossoms opened and the second immediately after the blossoms fell; spray formula used was: lead arsenate 5 lb. commercial lime sulphur $2\frac{1}{2}$ gallons and water 100 gallons. The orchard in which the chief experiments were carried on was close planted with Wagners, a variety very susceptible to Budmoth injury. In 1914, the infestation was reduced to 22 per

cent after two years spraying, the unsprayed plots showing an infestation almost three times as great; the spray therefore kills about two-thirds of the insects.

The Budmoth, as its name implies, affects the buds and the blossom clusters suffer severely from its attacks, the set being reduced very materially. It was found that the

reduction in set due to Budmoth was about 30 per cent. The injuries however, are not confined to the buds for in the fall the young larvae frequently fasten the leaves upon which they are feeding to the apples and damage the latter by feeding upon them, producing scars which reduce the grade of the fruit. A considerable percentage of the apples which would grade Nos. 1 and 2 are reduced to No. 3 and culls from the Budmoth injuries.



FIG. 1 One of the 5-year old Wagner trees in the 10-acre orchard belonging to Mr. R. S. Eaton, Kentville, N. S., in which the spraying experiments for Budmoth control were carried out (original).



FIG. 2 Apple injured by young larva of the Budmoth *Tmetocera ocellana*, showing how good fruit is degraded in addition to the earlier destruction of the buds (original).

The value of the educational campaign for spraying, where none is carried on and intelligent spraying where sprays are applied without sufficient knowledge of the methods of attaining the objects in view, was illustrated by a recent examination of the apple pack of one of the fruit companies in the Annapolis valley where special efforts are being made by Mr. Sanders to get more people to spray. The following selected results speak for themselves:

OWNER.	GRADES IN PERCENTAGES.		SPRAYS.*	GRADES IN PERCENTAGES.			
	Nos. 1 and 2.	No. 3 and Culls.		No. 1.	No. 2	No. 3.	Culls.
G. E. S	91 4	8 5	2, 3, 4, 5	62 6	28 8	1 9	6 6
L. W	90 3	9 5	1, 2, 3, 4	60 8	29 5	2 7	6 8
G. W. S	89 5	10 3	2, 3**	80 1	9 4	4 3	6
R. J. B	87 4	12	2, 3, 4	67	20 4	4 1	7 9
W. L. C	60 9	39	None	29 7	31 2	23 4	15 6
G. G.	56 2	43 7	"	43 7	12 5	25	18 7
S	35 2	64 6	"	17 6	17 6	13 2	51 4
E. M	34 7	65 2	"	20 8	13 9	18	47 2

*Spray:—No. 1, Semi-dormant; No. 2, Before blossoms open; No 3, Immediately after blossoms fall; No. 4, Two weeks later; No. 5, Ten days later.

** This is the best spray for Budmoth.

A FORECAST OF THE WORK FOR 1915.

BY C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST.

THE main lines of work that it is proposed to carry out during the coming year can be briefly stated. But as outbreaks of insects cannot, unfortunately, always be foretold at the present state of our knowledge, certain lines of work must necessarily be dependent upon the occurrence of such outbreaks. The distribution of the field officers of the Branch through the country places us in a better position to meet any outbreak that may occur and at the same time to carry on certain definite investigations on the most serious agricultural and forest pests. It is not proposed to increase the number of field stations during the year; the same number as last year, namely, nine will be maintained. The following is a brief description of the main lines of investigation that will be carried on by the field officers at the field stations and by the officers stationed at Ottawa:

INSECTS AFFECTING CEREALS AND FIELD CROPS.

The experimental work on the control of locusts will be continued in Quebec, Ontario and Manitoba, special attention being paid to the use of the poisoned baits found so satisfactory during last year's work and to the use of the bacterial disease (*Coccobacillus acridiorum*). The investigations on the various species of White Grubs (*Lachno. terna*) which have been carried on since 1913 will be continued in western Ontario and Manitoba. This investigation is being carried on in co-operation with the Bureau of Entomology of the United States Department of Agriculture with a view to covering the whole range of distribution of the different species of White Grubs. In Manitoba, a

study of the different species of Wheat-stem Maggots will be made as the investigations on the Hessian Fly and Wheat-stem Sawfly have now been completed.

Cutworms will again receive attention in eastern and western Canada and new control measures will be tried out. For the fifth season control work on the root-maggots affecting vegetables and field crops will be continued at Ottawa and similar work will be carried on in British Columbia.

In Alberta, obscure but serious conditions affecting winter wheat have led to an investigation of the parasitic and non-parasitic Eelworms or Thread-worms (Nematodes), microscopic worms which in some countries cause widespread and serious injury to field crops; this investigation will be continued.

INSECTS AFFECTING FRUIT CROPS.

In Nova Scotia the satisfactory results of our experiments on the control of the Budmoth (described on page 14 of the AGRICULTURAL GAZETTE) will be demonstrated where possible and the investigations of the Fruit-worms of Apple continued. Experimental work on the control of the Apple Curculio and certain other common insects affecting fruit will be undertaken in the province of Quebec. Further work on the control of the Apple Maggot in Ontario will be carried on in co-operation with the provincial Department of Agriculture, continuing the investigation which has now occupied our joint attention during three seasons. Last year a comprehensive study of aphids affecting fruit was commenced in Ontario and this will be continued. In British Columbia further studies will be made on the Budmoth of

apple and the Lesser Apple Worm, and the survey which is being made of fruit pests of the province will be extended.

INSECTS AFFECTING FOREST AND SHADE TREES.

In view of the widespread character of the depredations of Bark-beetles in British Columbia and the serious losses they are causing our investigations will be extended northward from the regions covered during the past two seasons. Further studies will be made in Stanley Park, Vancouver, B.C., on the insects responsible for the loss of so many trees in that natural reserve. It is also hoped that an opportunity will be afforded of studying forest insect conditions in the Peace River region from which we have evidence that would indicate the need of such an investigation. A complete study of the parasites of the Spruce Budworm which has been very abundant in eastern Canada during the last five years is being made and the work will be continued in conjunction with work on other parasitic insects in New Brunswick. It is also proposed to devote some attention to certain special insects affecting forest and shade trees in eastern Canada, such as the Bronze Birch Borer, etc.

INSECTS AFFECTING DOMESTIC ANIMALS AND MAN.

As far as opportunities are afforded further progress will be made in the study of the species of Canadian ticks affecting domestic and wild animals and man. The investigations on the house-fly, stable-fly and other flies of economic importance will be continued. The Canadian mosquitoes are also receiving attention.

BROWN-TAIL MOTH CONTROL WORK.

Arrangements have been made to continue the collection in the New England States of the parasites and predaceous insect enemies of this insect and the Gipsy Moth which will be colonised in Nova Scotia, New Brunswick and Quebec. In conjunction with this work the investigation that is being made on the parasitic control of certain of our commoner species of insects will be continued. This includes a study of the parasitic enemies of the Tent Caterpillar, Fall Webworm and Spruce Budworm. The experiments on the effect of temperature on the Brown-tail Moth larvae, and the habits of the insect under Canadian conditions will be extended.

THE LIVE STOCK BRANCH.

STATEMENT WITH RESPECT TO THE LOAN OF RAMS AND BOARS TO FARMERS' ASSOCIATIONS.

BY T. REG. ARKELL, B.S.A., B.SC.

THE policy of loaning pure-bred sires to farmers' associations organized in accordance with the regulations of the Live Stock Branch was first adopted in 1913 and consequently has been in operation only two years. Already gratifying results are being obtained, which is reflected in the

greater number of applications in 1914 than in 1913. This is remarked more particularly at the present time with those societies securing the loans of rams and boars, since male progeny of these classes from sires distributed by the branch have been marketed last fall and an opportunity given to recognize the improvement

in size and quality which a well-bred sire stamps upon his offspring. The readiness with which first-class animals, showing consistency of type and conformation, can be disposed of on the market is acting as an object lesson and incentive to relegate from the flock or herd the nondescript

sire. The accompanying photograph patently illustrates how a sire of pure breeding will impress his qualities upon the offspring over those of a mother possessing no fixed characteristics.

Uniformity of type in a district is also being attained through means of this assistance. This is a feature to which not sufficient stress has been paid in America and concerning which we can learn much from Europe and do well to adopt its methods in this respect. The branch restricts an association to the loan of one breed of each class and further applications must be confined to the original selection.

In the following table is shown the extent of the distribution during 1913-14 for rams and boars. The data show the number placed with associations by breeds as well as by provinces.



OFFSPRING OF AN ORDINARY GRADE EWE AND A PURE-BRED HAMPSHIRE RAM.

This is a striking illustration of the improvement gained from the use of pure-bred sires

RAMS LOANED TO ASSOCIATIONS OF FARMERS DURING 1913-14.

BREED	P E I		N S		N B		Que		Ont		Man		Sask		Alta		Total	
	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14
Shropshire	28	30	19	24	6	16	18	133	2	7	2	1	3		6	10	82	223
Oxford Down		17	38	58		9	5	18	3	4	11	5	1			1	66	105
Leicester		5				1	8	40		15			2				26	62
Cheviot	4	1	4				13					1					8	15
South Down	1	2		3			3	1		1				1			7	8
Hampshire					4		3										7	
Lincoln							3	1							1		3	2
Suffolk											3						3	
Cotswold				1														1
Total	36	55	61	86	19	18	40	206	21	27	16	7	3	5	6	12	202	116

BOARS LOANED TO ASSOCIATIONS OF FARMERS DURING 1913-14.

BREED	P E I		N S		N B		Que		Ont		Man		Sask		Alta		B C		Total	
	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14
Yorkshire		3	3	5	3	3	3	63	8	5	3	2	13	10	2	6			55	97
Berkshire	5		1	1		1	1	5	4		8	5	15	23	21	13	3	1	58	49
Poland China							2		1		4	1	1	12					6	22
Duroc Jersey			3	3		1	1	4	3			1	1	4	8	2	1		11	6
Chester White							1												7	8
Tamworth							1				1		1		1				1	3
Total	5	3	7	9	3	5	24	71	17	9	16	9	30	50	32	28	4	1	138	185

STATEMENT WITH RESPECT TO ASSISTANCE EXTENDED TO WOOL GROWERS' ASSOCIATIONS IN GRADING AND CLASSIFYING WOOL FOR MARKET.

BY T. REG. ARKELL, B.S.A., B.Sc.

ALTHOUGH 1914 was the first year in which assistance of this nature was granted to sheepraisers and the scheme was not actually formulated until the shearing season in eastern Canada had virtually commenced, a number of flourishing associations were organized and took advantage of it. The results show not only the benefits to be gained through co-operative effort in marketing, but also the greater financial returns derived from the presentation to the trade of a clean, classified article. The grading was pursued under the instruction and supervision of the wool experts of the branch and the wool was disposed through avenues devised and controlled solely by members of the different societies. Grading increased the price of wool fully four cents a pound.

Most of the actual grading in an organized fashion was performed in the western provinces. Wool classifiers of the branch were utilized, however, in giving lectures and demonstrations and providing general assistance with respect to the preparation of wool to sheepraisers in Ontario, Quebec and the Maritime Provinces. Their services were in constant demand and a corollary of their efforts has been the abolition of the system of tubwashing in some districts and plans established for the organization of several Wool Growers' Associations.

The following comprises in succinct form the results of the grading operations:—

COMPLETE GRADING STATEMENT

EASTERN DOMESTIC.

Grade.	Weight.	Approx.
		Shrinkage.
	Lb.	Per Cent.
Med. Comb	4,689	39
Low Med. Comb	5,155	35
Coarse Comb	5,689 ¹ / ₂	35
Lustre Comb	5,991	30 3
Fine Med. Cloth	52 ¹ / ₂	48
Med. Cloth	191 ¹ / ₂	37
Rejections	1,048	40
Gray and Black	115 ¹ / ₂	32
Tags	22 ¹ / ₂	60

WESTERN DOMESTIC.

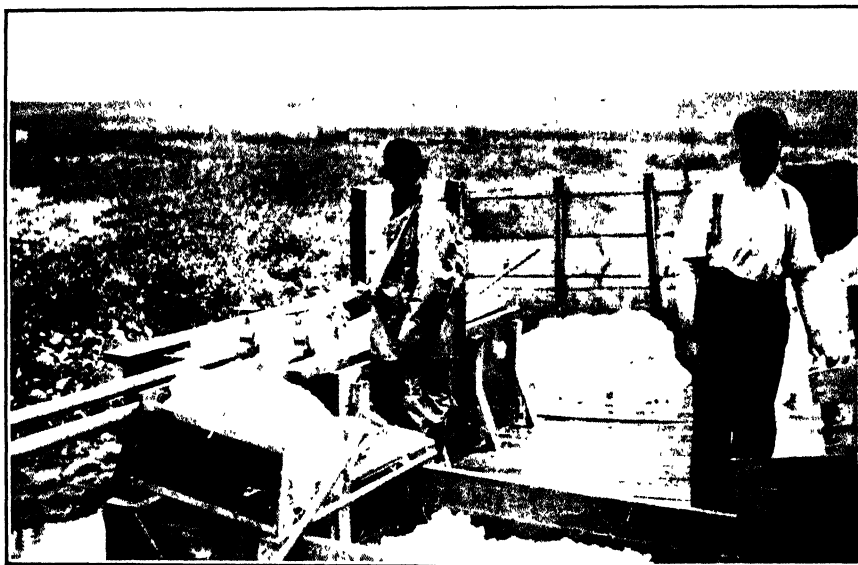
Grade.	Weight.	Approx.
		Shrinkage.
	Lb.	Per Cent.
Fine Comb	1,862	57 5
Fine Med. Comb	17,239	48 9
Med. Comb	23,681	44 4
Low Med. Comb	11,129	39 9
Coarse Comb	9,927	40
Lustre Comb	9,892	47
Fine Cloth	11,141 ¹ / ₂	64 5
Fine Med. Cloth	787 ³ / ₄	49
Med. Cloth	1,338	46 6
Rejections	908	44 4
Gray and Black	1,020	48 2
Locks and Pieces	60	
Tags	227	

RANGE.

Grade.	Weight.	Approx.
		Shrinkage.
	Lb.	Per Cent.
Fine Staple	21,220	62 9
Med. Staple	54,904	55 1
Low Staple	3,802	53 8
Fine Cloth	4,347	68 6
Med. Cloth	4,592	58 2
Rejections	941	66
Gray and Black	438	59
Locks and Pieces	743	72
Tags	1,071	71

AMOUNT OF WOOL GRADED FOR EACH ASSOCIATION AND AVERAGE
PRICE PER POUND.

NAME OF ASSOCIATION.	Amount of Wool.	Average Price per Pound.
	Lb.	Cents.
Pontiac, Que	7,212 ³ / ₄	20 ¹ / ₄
Manitoulin, Ont.	15,742	20 2.5
Manitoba	44,059	20
Calgary	6,942	19
Medicine Hat	60,231	19 ¹ / ₂
Bassano	27,840	21 ¹ / ₂
Carstairs	11,039 ¹ / ₂	19
Lacombe	9,935	19 ¹ / ₂
Central Alberta	18,216	21



HAND SCOURING WOOL ON AN ALBERTA RANCH.

NOTES.

T. O. Clark, B.S.A., and Norman Stansfield, the former representative for sheep and goat husbandry in the Maritime Provinces and the latter in charge of the wool exhibit which was presented at western fairs this

summer and subsequently in a demonstration car which was conducted over Canadian Pacific lines through Ontario and eastern Canada, have both enlisted and been accepted for active service in the war.

THE SEED BRANCH.

WEED SEEDS IN FARM LANDS.

BY J. R. FRYER, B.A., ASSISTANT SEED ANALYST, OTTAWA.

IN the spring of 1914 an investigation was commenced by the Seed Branch to determine the prevalence of weed seeds in farm lands and to discover, if possible the relation of their prevalence to cultural conditions. Although the investigation has only begun, it has already yielded significant results. Samples of soil were taken from fields in Ontario, Saskatchewan and Alberta which were contaminated with weeds. Nine samples were secured from each field; three from the surface inch, three at a depth between two and three inches, and three at from five to seven inches. A record of the culture and cropping of the field was obtained. The samples were examined at the Ottawa Seed Laboratory; the number and kinds of weed seeds were determined for a definite weight of the air-dried soil of each sample. After the seeds were carefully separated and identified, they were tested for germination.

VITAL WEED SEEDS IN SOIL SAMPLES.

The table following which gives the number of weed seeds found in the samples refers only to samples taken from southern Ontario. The majority of these samples came from sods between five and twenty years old, and most of them were known to be very weedy. The numbers are worked out on a basis of 20 ounces of each sample, but in the last column at the right the average numbers of vital seeds have been calculated for layers of soil one yard square and one inch thick at the three different depths. The numbers in this column should be especially noted as they indicate,

in a general way, the surprising prevalence of vital weed seeds in the old meadows and pastures sampled. They also give some conception of the relative prevalence of vital seeds at the three depths indicated. By computation the number in the average piece of land one yard square and ploughed deep is found to be approximately 3,400.

Depth at which samples were taken	Average number of vital seeds in 20 oz. of sample.	Average number vital weed seeds per square yard one inch deep
1st inch	21	1107
2 3 inches	10	457
5 7 "	7	331

All the above numbers are averages; in many cases the numbers of vital seeds were greatly in excess of these. One surface sample from southern Ontario contained 210 vital seeds in 20 ounces (20 ounces of air-dried soil has an approximate volume of 28.6 cubic inches). Another surface sample from Saskatchewan contained the extraordinary number of 1,200 vital noxious seeds in 20 ounces of the sample. The field from which this soil had been taken had been cropped with oats in 1911 and flax in 1912 and 1913.

VITAL WEED SEEDS IN SODS OF DIFFERENT AGES.

The following table takes in all the sod fields examined, ranging in age from five to twenty years. The sods have been grouped according to the age, and the average number of vital seeds in 20 ounces of the sample at each of the three depths in each group has been determined.

Age of Sods.	Average number vital seeds in 20 oz. sample at depths indicated.		
	1st Inch.	2, 3 Inches.	5, 7 Inches.
5-10 years	18	14	7 ¹ / ₂
10-15 "	15 ¹ / ₂	6	3 ¹ / ₂ , 3
15-20 "	20	2 ¹ / ₂	2 ¹ / ₂

Two points are worthy of notice in connection with this table:—

1. There is no great variation in the number of vital seeds in the surface samples from fields included in the three age groups, while there is an appreciable decreasing gradation in the prevalence of vital seeds at both the other depths as the age of the sod increases. This is to be expected, for the vital seeds buried more than two inches deep would, with age, gradually lose their vitality and disappear, while seeds in the uppermost inch grow and produce seeds which fall to the ground from year to year and thus maintain about the same prevalence of vital seeds in the surface inch.

2. As the age of the sods increases, the prevalence of vital weed seeds at the depth of 2/3 inches approaches more nearly that at 5/7 inches, and at both these depths the prevalence differs more widely from that at the surface.

CONTINUOUS GRAIN CROPPING AND
SYSTEMATIC ROTATION.

Some idea of the relative prevalence of weed seeds in land under continuous grain cropping and systematic crop rotation may be had by comparison of the two typical fields described below. The numbers refer to all the weed seeds found in the samples. A large proportion of these were no doubt dead but the percentage of vital seeds was about the same in both cases.

At Lacombe, Alberta, a field was examined which had grown oats and barley regularly without summer fallow from 1904 to 1912. It was nearly always fall ploughed but was harrowed before ploughing to sprout the weed seeds. In 1913 it was seeded to timothy and alsike. The following is a list of the weed seeds found in samples from this field.

Seeds found in 6 oz. of surface soil.		Seed found in 6 oz. of soil taken 2/3 inches deep.		Seeds found in 6 oz. of soil taken 5, 7 inches deep.	
Ball mustard	51	Ball mustard	59	Ball mustard	39
Lamb's quarters	78	Lamb's quarters	70	Lamb's quarters	69
Black bindweed	4	Black bindweed	2	Black bindweed	2
Grass	1	Sedge	1	Other sorts.	2
		Other sorts	1		
Total	134	Total	133	Total	112

It is noticeable that the prevalence of weed seeds is nearly the same at all three depths

Six ounces of air dried soil has an approximate volume of 8.58 cubic inches, and from the above figures it may be calculated that a square yard of the surface inch of this field

contains about 20,240 weed seeds.

Samples were taken from a field near Guelph, Ont., which for the last ten years has raised the following crops: 1905, meadow; 1906, corn (field was fall ploughed in 1905); 1907, oats; 1908, bare fallow; 1909, winter wheat seeded with timothy

and clover; 1910, pasture; 1911, ploughed in early summer, seeded with millet and thoroughly cultivated after millet was removed (this treatment was owing to the preva-

lence of white cockle); 1912, barley seeded with alfalfa; 1913 and 1914 alfalfa. The following weed seeds were found in samples from this field.

Weed seeds in 6 oz. of surface soil.		Weed seeds in 6 oz. of soil at 2-3 inches.		Weed seeds in 6 oz. of soil at 5-7 inches.	
White cockle	9	White cockle	6	White cockle	6
Black medick	10	Black medick	8	Black medick	6
Lamb's quarters	7	Lamb's quarters	5	Lamb's quarters	8
Black bindweed	4	Black bindweed	1	Black bindweed	—
Dandelion	2				
Canada thistle	1				
Total	33	Total	20	Total	20

The prevalence of weed seeds at the three depths in this field is practicably constant while a square yard of the surface inch contains approximately 5,000 weed seeds. It

is significant that this field, which has been under a good system of cultivation, contains only about a quarter as many weed seeds as one under continuous grain cropping.

THE DAIRY AND COLD STORAGE BRANCH.

NOTES ON THE DAIRYING INDUSTRY OF SWITZERLAND.

BY J. A. RUDDICK, OFFICIAL DELEGATE FROM CANADA TO THE SIXTH INTERNATIONAL DAIRY CONGRESS.

IN the August issue of the AGRICULTURAL GAZETTE, I referred briefly to the Sixth International Dairy Congress, held at Berne, Switzerland, June 8 to 12 last, giving a list of the countries officially represented, etc.

THE SWISS NATIONAL EXHIBITION.

The sessions of the Congress were held on the grounds of the Swiss National Exhibition, an arrangement which enabled the delegates to give considerable attention to the finest display of the life, industries and activities of a people that the writer has ever seen. This exhibition is held once in 12 or 15 years and is open for six months. It is purely national in all respects. No foreign exhibits of any kind are shown. The exhibition deserves more than passing notice, but space will permit only of reference to a few salient features.

It was impressed on the visitor at every turn that the moving principle of the whole exhibition was education, rather than entertainment or advertising. There was an entire absence of what has become known at our exhibitions as the "Midway" with its silly and often degrading shows. One was struck also by the orderliness of the grounds and buildings. No litter or waste paper was to be seen anywhere because the people were careful to place all such rubbish in the receptacles provided for that purpose.

It was interesting to see troops of rural school children visiting the exhibitions under the guidance of their teachers and having everything carefully explained to them. It was said that practically all the pupils in Switzerland of a certain grade were to be brought to the exhibition some time during the summer. I am not

sure I would care to see Canadian children so serious minded as these young Swiss appear to be, but there is abundant evidence in the country's progress and achievement, that the education which they receive makes for efficiency in after life. All told the Swiss National exhibition was well worth seeing, and it was made none the less interesting by the fact of its being located on high ground overlooking the beautiful city of Berne, with the Bernese Oberland, presided over by the queenly Jungfrau, for a background.

PROCEEDINGS OF THE CONGRESS.

With respect to the Congress itself the proceedings were not marked by any very definite expression of opinion respecting the subjects set down for discussion. The question of the control of bovine tuberculosis was considered at some length. The veterinary section, led by Professor Ostertag the well known German authority, did not succeed in having their plan for veterinary control endorsed. Definite action was postponed until the next Congress. The question of proposing a fat standard for the dry matter of all kinds of cheese was likewise laid over for future consideration.

It is generally admitted that the most useful functions of these triennial gatherings, is the facilitation of intercourse among the delegates, and the opportunities which they afford for a world wide acquaintance among workers in the field of dairying. The excursions which followed the sessions at Berne were, to many of us, the most interesting and instructive feature of the Sixth Congress.

THE EXCURSIONS.

The Bacteriological Institute at Leibfeld, which was visited, is of international reputation and some of the best research work in dairy bacteriology has been done there. The labours of Dr. V. Freudenreich, Dr. Orla-Jansen and Dr. Burri are familiar to all dairy students.

The Agricultural College at Rutti, and especially the dairy department, was investigated with interest. The dairy course at Rutti covers the whole field of dairy farming, including the feeding, care and milking of the cows, the manufacture of the cheese, the feeding and rearing of the pigs, etc. The students do all the work, and thus permit the school to be conducted with a surprisingly small appropriation. The buildings and equipment are thoroughly practical and one is led to believe that students are not afforded much accommodation or comfort superior to that which is found on an ordinary farm. For this reason it is claimed that graduates go back to the farm without the discontent which sometimes follows such training received under other conditions.

The last excursion, which was made by steamboat, railway, motor car and afoot, covered a goodly part of central and northern Switzerland, and while the principal object was to inspect the Swiss dairy operations of both the tablelands and the alpine pastures, it gave the delegates an opportunity of seeing some of the finest Swiss scenery. A railway journey to the top of the Jungfrau, (12,000 feet) via Lauterbrunnen and Grindelwald, and another over the Rigi (6,000 feet) were the chief scenic attractions. A walk down from the summit of Rigi, over a celebrated alpine cattle raising pasture, was much enjoyed by those who joined the party.

DAIRY METHODS.

The manufacture of cheese and condensed milk are the two most important branches of the dairy industry in Switzerland. A form of co-operation in the manufacture of cheese has been in operation since the 12th century. Most Canadians are familiar with the large flat cheese full of round holes, which goes under the generic name of "Swiss," but which is divided by the initiated into two varieties known as Gruyere

and Emmenthal. The export trade is confined chiefly to the Emmenthal, which is sent to every cheese eating country in the world. We had a chance to see some well equipped city dairies, notably one at Zurich established by Dr. Gerber, said to be the best in Europe.



CITY DAIRY AT BALE.

The methods followed by the Swiss cheese makers call for no special mention, but the production of milk, especially in the matter of the yield per acre, has been carried to a point far beyond that which has been generally reached in Canada. This has been accomplished through the persistent development of two excellent breeds of dairy cattle, by the most careful conservation of all manure both solid and liquid, and by studying the economics of feeding so as to utilize the grass crops to the best possible advantage. Cow testing has been systematically practised by some Swiss dairymen for over 40 years. The number of dairy cattle kept per square mile of arable land for the whole country is just about 100, but in the less mountainous cantons like Berne the number is as high as 265 per square mile.

On the central plateau a very large proportion of the arable land is laid down in permanent grass, but the cattle are seldom allowed to graze. The grass is cut as required and fed in the stable where the animals are confined. The stables are mostly old and fall far below the modern standards of lighting, ventilation and general sanitation, and yet the

cows are exceedingly healthy to all outward appearances. The grass is often cut at a very immature stage, and nature, as if in resentment at such interference with her plans, seems to put forth renewed and more vigorous efforts in subsequent growth, so that the same ground is cut over several times. In the Alps grazing is the universal practice.

Where the cattle are stabled the utmost care is taken to preserve every ounce of manure. The liquid is drained into tanks from which it is carried on wet days and sprinkled over patches of recently cut grass. Much more might be written on these points but lack of space prevents further reference at this time so we pass on to consider briefly the interesting breeds of cattle which constitute the bovine population of the country.

SWISS DAIRY CATTLE.

First in point of antiquity is the Schwyz (Brown Swiss) which it is

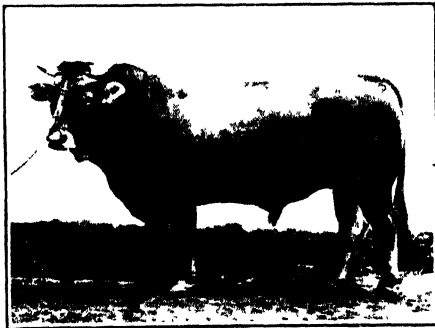


A BUILDING ON A SMALL SWISS FARM, COMPRISING HOUSE, STABLE AND STORAGE FOR FODDER.

said have been bred for a longer time in one place than any other known breed. They have been traced back to the period of the lake dwellers. The colour is a dull grey or mouse colour. Animals (very rare) showing any white are not admitted to the show ring. All have black muzzles with a light rim and the inner side of the legs are lighter than

other parts of the body. The legs are short and strong as befit a hill climbing race. They fatten readily and the quality of the beef is said to be excellent. The weight varies according to the region but the average of the cows of the heavy type is given as 1320 to 1430 pounds. A full grown bull will weigh on the average 1800 to 2000 pounds and in some cases as high as 2400. The average annual yield of 72 Schwyz cows, of which records have been kept, was 8,373 pounds of milk testing 3.88 per cent of fat, but these were probably superior animals.

The most important breed in point of numbers, comprising 55 per cent of the total cattle is the Simmen-



SCHWYZ (BROWN SWISS) BULL.

tal. This breed is quite modern compared with the Schwyz, having been introduced by the Burgundians in the 5th century. The colour varies from yellow to dark red with white spots. They are heavier than the Schwyz, cows running as high as 1600 pounds weight. The breed is remarkable for the rapidity of growth in young animals. Most of the work animals are taken from this breed, the cows frequently being pressed into service on small farms.

The average annual milk production of Simmental cows, according to numerous enquiries made by Dr. J. Kappeli in various Swiss farms, is 7,700 pounds per head, or $5\frac{1}{4}$ to $5\frac{1}{2}$ times the live weight. Herds that are well fed in winter give an average

of 8,000 pounds and individual cows have produced as much as 15,400 pounds in the year. The average fat test is 3.75 per cent.



SIMMENTAL BULL.

A third breed, known as the Friburg, of relatively small importance as regards numbers, resembles the Simmental except that the colour is black and white like the Dutch cattle.

The D'Herens is a small dark brown mountainous breed, few in number and confined to the Valaisan Alps.

All cattle in Switzerland are practically pure-bred. Cross breeding is almost unknown, and there are no animals in the country of any other breed except those herein described.



SIMMENTAL COW.

CATTLE RAISING IN THE ALPS.

An interesting development has taken place during recent years in many of the Alpine regions where the manufacture of cheese has been abandoned for the business of cattle raising to replenish the native herds

on the plateau, and to supply the large demand for Swiss bred animals in Austria-Hungary, Germany, Italy and Russia. It is held that the vigour of the cattle is improved by the pure mountain air, and the exercise involved in climbing the steep slopes of the pastures. The real alpine pastures begin at an altitude of about 2,500 feet, and extend upwards nearly to the limit of vegetation, or somewhat over 8,000 feet. Goats are pastured in some places as high as 9,000 feet above sea level. In the month of May the cattle are taken to the lower slopes and as the summer advances they are driven by successive stages to the higher altitudes and the grass on the first pastures is allowed to mature for hay. By the middle of September they have been brought down again to feed on the aftergrass of the meadows until stabled for the winter.

SOME CHARACTERISTICS OF SWISS CATTLE.

The extreme docility of Swiss

cattle is very noticeable. Animals at large in the pastures will allow a crowd of strangers to approach and handle them without the slightest sign of restlessness. They appear to like it. Even aged bulls are led in a common halter, often without a ring in the nose. It is the boast of the Swiss cattle owner that the placidity of his cows is so marked that there is no occasion to avoid a crowd of strangers in the stable at milking.

It was remarked that every animal, milking or dry, was in beef condition. Although our visit was made in the month of June, cows in poor condition were conspicuous by their absence. Perhaps it would be more accurate to attribute this condition to generous feeding rather than to mention it as a special characteristic of the breeds.

It would be quite possible to amplify the points thus briefly touched but further reference to an interesting subject must be reserved for another occasion.

CONFERENCE OF DAIRY RECORDERS.

A conference was held in Ottawa on December 16 and 17 of most of the English speaking recorders in the Dairy Record Centres maintained by the Dairy Division. There were present some 23 recorders, representing dairy record centres in the provinces of Ontario, Quebec and Prince Edward Island, and 3 field superintendents, H. Mitchell, J. B. E. Trudel and H. W. Coleman; also Mr. G. H. Barr and Mr. C. F. Whitley of the Dairy Division. Four sessions were held at two of which addresses were given by Mr. J. A. Ruddick, Dairy Commissioner, and by Mr. R. S. Hamer of the Live

Stock Branch. A visit was paid to the Experimental Farm dairy stables, where Mr. G. B. Rothwell, Assistant to the Dominion Animal Husbandman, minutely explained questions of feeding, ventilation, etc. During the sessions there was brisk discussion on a varied series of topics arising out of the year's work. Plans were developed for further extension of cow testing, for securing feed records and for assisting with dairy contests at fall fairs. A number of suggestions were offered which will help to make this dairy record work of more value than ever to the average cheese factory and creamery patron.

PART II.

Provincial Departments of Agriculture and of Education.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE AND OF EDUCATION
INCLUDING AGRICULTURAL COLLEGES.

A NEW YEAR IN AGRICULTURAL INSTRUCTION.

PRINCE EDWARD ISLAND.

BY THEODORE ROSS, B A., B.S.A., SECRETARY FOR AGRICULTURE

ORGANIZED work in Agricultural Instruction had its beginning in Prince Edward Island in 1886. In that year "Tanner's Principles of Agriculture" was placed on the curriculum of the public schools of the province. Four years later Professor Arthur Shuttleworth was appointed to the staff of Prince of Wales College as Professor in Agriculture. In 1891 the first examination in agriculture for entrance to Prince of Wales College was held. The same year Bain's "Natural History of Prince Edward Island" was added to the school course. Prof. Shuttleworth was succeeded in the autumn of 1891 by Prof. George Harcourt, now Deputy Minister of Agriculture for Alberta. He remained in the college for two years, and after his resignation no successor was appointed. In 1900 the Provincial Department of Agriculture was organized, with a staff consisting of a Commissioner

of Agriculture and a Secretary, who was to give half of his time to the teaching of Agriculture in Prince of Wales College. In 1901 a number of Farmer's Institutes were organized throughout the province, and later the Agricultural staff was increased by the addition of a stenographer and a clerk, who kept the Vital Statistics.

Up to 1913 the expenditure, exclusive of exhibition grants, had been in the vicinity of \$5,000 per annum. In this year the grant for Agriculture was implemented from the federal treasury by the Federal Aid Act, and the following year was still further increased by The Agricultural Instruction Act. This opened the door not only for expansion, but for "A New Year in Agricultural Instruction," and in co-operation with the Education Department a comprehensive system was worked out, which was intended to include not only the youth of the province, but also those who are generally supposed to have

completed their education: for the former, Long Courses, and for the latter, Short Courses.

Agriculture is being introduced into the common schools and will ultimately be one of the most important subjects on the curriculum.

The greatest need in connection with this work is teachers trained in this particular line. To meet this need a course is being given in Prince of Wales College, which all must take who expect to qualify as

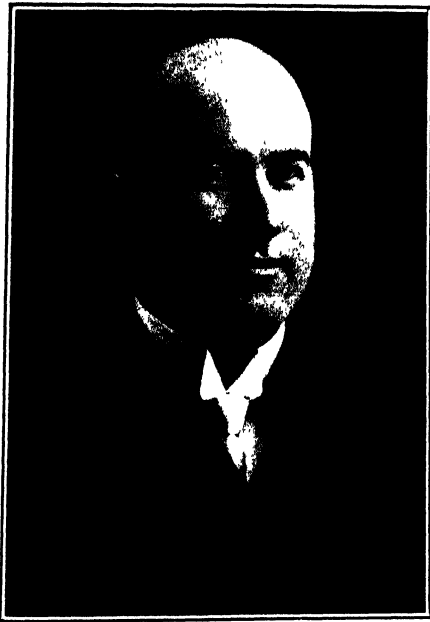
also attended the Summer School of Science, which was this year held in Charlottetown in conjunction with our Summer School for Teachers.

At the close of the Summer School a course in Nature Study was prepared for the rural schools, and a copy of it placed in the hands of each teacher. This course is also being made the basis of science work in Prince of Wales College. Although Nature Study is now on the Public School Course of this province, and the duty of teaching it is as imperative as that of teaching reading or arithmetic, it has been considered advisable to offer a bonus of \$10 per annum to those teachers, whose pupils reach a certain degree of excellence, either in school garden work or in home projects.

At the last meeting of the School Inspectors held in December 3rd, 1914, in conjunction with the Departments of Education and Agriculture, they reported that 115 School Gardens had been either established, or arrangements have been made to carry them on in 1915. Home projects had been undertaken by 870 pupils, 545 had agreed to grow vegetable seeds, 58 schools had collections of weed seeds, ranging from 5 to 30 varieties, 18 have collections of mounted seeds, and 5 have collections of mounted insects, the greatest number of any one collection being 52.

Besides the introduction of Agriculture in the rural schools, a four months course in Agriculture has been provided for those young men who have left school and who intend to follow farming for a livelihood. It is not intended to be a preparation for any higher institution, and the particular circumstances of each pupil receive consideration as far as possible. When this course has been completed and the students have returned to their homes they will receive special attention from the department's staff of specialists.

Short Courses in the various de-



THEODORE ROSS, B.A., B.S.A.
Secretary for Agriculture, Prince Edward Island

teachers, and a Summer School provided for those who have already obtained licenses. Again, the number of School Inspectors has been increased from three to ten, so that each inspectorate now consists of about fifty school districts. To prepare these inspectors for their new duties, and to secure as much uniformity as possible, a short course was provided for them which consisted of practical work in school gardening, lectures, and seminars or round-table discussions. They

partments of agriculture and in household science have been provided at Charlottetown. Ample provisions have been made for all those who wish to attend the former, but less than half of the number who have applied for the latter can be admitted. To place the students from the different parts of the province on an equality, the railway fare of all those who attend is paid by the Department of Agriculture.

Although the attendance at the short courses that have already been held has been far greater than was anticipated, and more applications have been received for the next short courses than can be accepted, still, only a very small percentage of our people can attend, and provision has been made to carry Agricultural Instruction to those who are unable to attend. The number of Farmers' Institutes has been increased and now cover almost the whole of the province. The Act makes provisions for sixty institutes and fifty-two are now in active operation. Each of these institutes holds fortnightly or monthly meetings throughout the autumn and winter months, and two or three meetings during the summer. The meetings of an institute are not always held at one place, but are held in one school district after another in regular order. A program is prepared by the Farmers' Central Institute (which is made up of delegates from all the Farmers' Institutes and from all the Agricultural organizations of the province) and the Department of Agriculture, and specialists from the department attend these meetings as frequently as possible. During the summer months short courses in live stock judging are held and practical demonstrations of various kinds given. In arranging for the former two or more institutes frequently unite, so that a better class of stock is obtained at a comparatively small expense.

Women's Institutes are also being organized. Each institute may in-

clude one, two, or three school districts, and the meetings are to be held in the schools. Already thirty-one have been organized with a total membership of 750. A supervisor is in charge of this work and two assistant supervisors have already been appointed. It is intended that each assistant supervisor's district shall coincide with a school inspector's, so that when the Island is completely organized there will be ten assistant supervisors of Women's Institutes.

The work in each county will be under the direct supervision of a county representative. One has already been appointed for King's County; the instructor in Animal Husbandry is acting for Prince County; and a young man now in the Agricultural College was acting last summer for Queens County.

The system as at present planned is fairly complete, and any further expansion will be but the implementing of the work that is now being undertaken.

To summarize: When the present plan has been completely developed, there will be at the Capital, the Department of Agriculture with the Provincial staff of specialists. In each county there will be stationed a district representative, who will be assisted by the Agricultural and Educational specialists when their services are required. In the rural districts there will be school inspectors (who are at the same time agricultural instructors), and assistant Supervisors of Women's Institutes, working in co-operation with one another, and receiving the assistance of the district representatives and the provincial experts. The schools will be taught by teachers who have had a training in nature study and in household science, and will have at their call the whole staffs of the Departments of Agriculture and of Education. Those who have completed the common school course may continue their studies, either in agriculture or in household

science, at the institutions provided in Charlottetown.

Such, in outline, is the "New Year in Agricultural Instruction,"

which has been made possible in Prince Edward Island through the financial assistance provided by the Agricultural Instruction Act.

NOVA SCOTIA.

BY M. CUMMING, B.A., B.S.A. SECRETARY FOR AGRICULTURE.

GREATER production for 1915. That should be the object of all agricultural instruction during the coming year. And it "will go" for the people are behind it. It will have the support of every farmer who appreciates the existing conditions, mainly because the farmer is patriotic, and, if he feels it will help the Empire, he will produce. Moreover, unless all signs fail, the markets are assured and when one can cast his bread on the waters and reap after a few days, he has an unprecedented stimulus.

Nevertheless, all this calls for dissemination of information in regard to the actual conditions and, in many parts of our country, instruction as to the best methods of cultivation, the selection of good seed, the proper use of manures and fertilizer, the prevention of inroads by insect and fungous pests and the promotion of everything else that will lead to the regulation of the one great need of the year—production. To overtake this, every individual engaged in the agricultural education campaign should strain every nerve and, impelled by the vision of the needs of Canada and the Empire, should realize, as never before, that "England expects every man this day to do his duty." It should be a year of intensity of effort.

Nor is this demand without its compensation to the agricultural educationalist. Work is itself its own reward but there are external rewards in this case such as have never before been offered. Canada has awakened from a dream of financial prosperity to a realization of the

fact that this prosperity was more seeming than real. The city has been developed at the expense of the country. Our commerce and our financing have far exceeded our production. Imports have exceeded our



M. CUMMING, B.A., B.S.A.,
Secretary for Agriculture for Nova Scotia.

exports nearly two to one. Artificial values have, in many cases, been created. We have been living on borrowed money and cannot now renew our obligations. We must, therefore, create wealth in Canada by turning our natural resources into money and agriculture is the one great resource that lends itself to this creation.

All this means that, in our agricultural advancement campaign, we will have, to an extent we never had before, the support of the financier, the manufacturer, the tradesman and in fact everyone who is interested in Canada's progress. We should, therefore, aim to do big things and by the very bigness of our conceptions secure public appropriations for agriculture which are, to an extent, commensurate with the bigness of the industry. This should be a year for big thinking and for big thinking put into action.

While the temporary occasion of this zeal for production is the financial crisis into which we have fallen, a condition precipitated but not caused by the war, yet it is far from our idea that this work should be merely of a temporary character. Now is the time to lay strong and broad foundations for permanent production in Canada. This is the hopeful phase of the present crisis. Artificiality will be removed and we will get down to things solid. If we rise to the occasion, Canada will derive a lasting benefit from the present crisis which will make her prosperity sure and will enable her to stand the stress of future years in the way in which any country should that is so richly en-

dowed with natural resources.

In Nova Scotia, our plans for largest developments are along the lines of farm demonstration carried on by experts placed in different counties of the province and for the extension of the same co-operative principal in dairying and other lines which has so effectively promoted our first industry. Splendid results have followed the efforts already directed along these lines of work and we have not the slightest doubt of the successful outcome of the future campaign. The field of work is before us. We think public money will be available to a greater extent than in any previous year. The greatest difficulty will be to get men, for in this work, there are required men of vision, men who can do things and who are not afraid to spend their whole energy in promoting whatever line of work they may be engaged in. We appeal, therefore, to our young men, whether on the farm or in college, to be ready. Study the agricultural situation this winter and when spring gives opportunity, be prepared to do your best in whatever line your services may be employed—there is a call for production just as strong as the call to arms.

NEW BRUNSWICK.

BY A. G. TURNEY, B.S.A., ACTING SECRETARY FOR AGRICULTURE.

THE year 1915 opens with the promise of more and better Agricultural Instruction in this province than in any previous year.

While the war may possibly render necessary temporary policies of retrenchment in other departments of the Provincial Governments, yet it has resulted in emphasizing the predominating importance of agriculture, and hence the necessity not only of not reducing the expenditure of the

public monies for its stimulation, but rather of increasing it in every possible way, is generally recognized.

ELEMENTARY AGRICULTURAL EDUCATION.

Marked advancements in the teaching of elementary agriculture will be made this year and the work which it is intended to carry out in this respect is the subject of a separate article now being written by Mr. R. P. Steeves, Director of Ele-

mentary Agricultural Education, and which will be published in an early issue of THE AGRICULTURAL GAZETTE.

AGRICULTURAL EDUCATION.

The first month of the new year will witness the completion and opening at Sussex of the second of New Brunswick's Agricultural Schools. It will be remembered that the first of these schools was completed at Woodstock a year ago. Preparations for the building of the third school, which will be located



J. B. DAGGETT,

Secretary for Agriculture for New Brunswick.

at a convenient centre in the northern section of the province, will probably be arranged this year. A six weeks' course in Agriculture will be held at Woodstock, January 5th to February 12th, and at Sussex, February 16th to March 26th. No effort is being spared to equip these schools with everything necessary for effective agricultural instruction, and the new year will witness definite advancement in our policy of Agricultural Education.

AGRICULTURAL SOCIETIES.

There are now 114 societies, receiving grants aggregating \$16,500. Properly organized, conducted and superintended, the Agricultural Societies are capable of doing more and better work towards the general improvement of agriculture in New Brunswick than any other division of the department. But the best results may be obtained only by personal association and direction, and our efforts are being devoted towards that end. The personal supervision, which was first instituted in 1913, by the appointment of J. E. DeGrace, as Superintendent, and which has already produced improvements, will be continued, and increased if possible.

LIVE-STOCK.

In 1914 the purchasing of pure-bred stock by the Agricultural Societies was encouraged by bonuses from the department, amounting to 15 per cent of the purchase price of an animal costing \$50 or under, and 25 per cent of the purchase price of an animal costing over \$50. Animals so purchased were subject to the examination and approval of a qualified officer of the department. The administration of this bonusing of pure-bred stock was carried out by Mr. W. D. Ford, Animal Husbandman, and occupied most of his time. This year the regulations are somewhat different, the department agreeing to pay a bonus of 20 per cent on bulls costing more than \$50, but no bonus will be paid on bulls costing less than that amount. It is further stipulated that the Societies shall agree to purchase only bulls of the same breed and to use them in that locality for a period of at least 10 years. An additional yearly bonus of 10 per cent will be granted for each year the bull is kept for breeding purposes. The new regulations in detail will shortly appear in THE AGRICULTURAL GAZETTE.

It is also intended to bring in 4 more demonstration flocks of sheep. Last year the department imported 50 pure-bred sheep from Ontario. These were divided into 5 flocks of 10 each and placed in charge of reliable farmers in different sections of the province, with the double object of stimulating an interest in sheep raising and supplying accurate information as to suitable breeds and methods of handling sheep. The department believes that the Societies should be encouraged in the purchase of pure-bred rams and some assistance in this respect is planned.

If possible some investigation work will be carried on to ascertain to what extent tuberculosis is prevalent in the pure-bred stock of the Agricultural Societies.

POTATO GROWING.

The inspection service recently established by the Dominion Government for all potatoes shipped from Quebec and the Maritime Provinces to the United States and Canadian points west of Quebec should eventually place the potato industry in New Brunswick on a far more satisfactory and permanent basis than has heretofore existed. Three inspectors, whose salaries and expenses are paid by the Provincial Department, are now working with the Dominion inspectors, under orders from the Dominion Botanist, and if the occasion arises, more inspectors will be provided by the province. While the present inspection is only for the Powdery Scab, we may confidently expect that it will be extended in the near future so as to cover other diseases, and thus materially improve the condition and standard of our potatoes on the markets of the world. It is probable, too, that some of the inspectors will devote part of the summer season to a field campaign, with the object of encouraging the growers to practise seed selection and adopt cleaning-up methods.

HORTICULTURAL DIVISION.

The department will continue the supervision of the illustration orchards throughout the province and the operation of the four demonstration orchards in the counties of Westmoreland, Kings and Sunbury. It is hoped to establish one additional demonstration orchard. The usual work of individual demonstrations in the pruning, grafting, spraying and general renovation of old orchards will be carried on, and field assistance and advice given in the selection of orchard sites and the planting of orchards.

It is hoped to have one of the assistant horticulturists devote a considerable portion of his time to the investigation of all phases of vegetable growing in the province and the collection of the fullest possible information on the same, with a view to taking steps for the betterment of the industry.

The usual assistance will be given in the control of plant diseases, and the work of collecting class-room material for short course instruction in weeds, weed-seeds, insects and plant diseases will be continued.

DAIRYING.

The formation and supervision of Cow Testing Associations and Record Centres, which is conducted by the Federal Dairy Division, will be continued. The work is progressing slowly but surely and will ultimately prove of great value. Lectures and demonstrations in dairying will be given at the general short courses in agriculture at Woodstock and Sussex and also at the Sussex Dairy School. Experimental work in alfalfa will be continued and increased. Radical changes in the classes and sections offering premiums for dairy products at exhibitions and fall fairs will probably be adopted. The inspection of cheese factories and creameries will be continued and special efforts made towards securing a greater economy

in the production and manufacture of dairy products.

SOILS AND CROPS DIVISION.

Co-operative experiments.—Field experimental work will be carried on in co-operation with a large number of farmers in various parts of the province. Corn and alfalfa will be the special features, and will receive most attention. In addition, the work will include variety, cultural and seed growing experiments with grain, roots, soiling crops, grass mixtures and red clover. Special experiments in the spraying of potatoes, the eradication of weeds and crop rotations will be carried on in a few places. This work, because they do it themselves, should have a very direct educational value for the farmers, while at the same time the large number of reports handed in, though individually not very valuable, should, when taken collectively, enable us after a few years' time to reach quite reliable conclusions.

Under-drainage.—Lack of expert advice, the labour problem, and the difficulty in securing good tile at a reasonable price are to our farmers three of the most important limiting factors in under-drainage. This division plans to engage a trained student for the summer months and make a beginning in free survey work and advice on drainage for the farmers. With the traction ditcher as

much demonstration work as possible will be done in various parts of the province. Open air meetings will be held in connection with these demonstrations, while the ditcher is at work. The whole question of drainage will be discussed including methods of surveying, digging with the machine and laying tile demonstrated. There will also be a special demonstration in the manufacture of cement tile with a hand machine.

Pulverized Limestone.—The deficiency of lime in our New Brunswick soils is serious enough to constitute an important problem. Since pulverized limestone has been found just as effective as burnt lime, as well as a cheaper and more advantageous form to use, and limestone deposits are widely distributed over the province, the department plans to purchase a first-class portable pulverizer and make demonstrations in the production of this material. The work will be carried on in co-operation with agricultural societies or groups of farmers, whose share in the work will be to quarry the limestone and prepare it for the machine. Experiments are already under way to show the effect of applications of limestone to the soil, both alone and in conjunction with barnyard manure and commercial fertilizers. In this work, as in the drainage work, meetings will be held in connection with the demonstrations.

QUEBEC.

BY G. A. GIGAULT, DEPUTY MINISTER OF AGRICULTURE.

THROUGH the medium of the press and Boards of Trade Canadian farmers have been urged to increase agricultural production in the interest of producers and consumers alike. The war that is now raging in Europe will cause a decrease of production in several large coun-

tries and Canadian farmers are advised to take advantage of this opportunity and of the higher prices that are being offered for agricultural produce. It is specially recommended that they enlarge the area in wheat, while maintaining, however, the usual area in oats. In order to follow this

suggestion, the farmers must employ more help and adopt better and more productive methods. But are the farmers going to better their condition by producing more? Unless this can be shown there is little use in urging them to grow more crops. Wages of farm labourers are high and the farmers who have to pay these wages cannot make a profit unless they are able to sell their products at correspondingly high prices. This alone will encourage the "back to the farm" movement and create



G. A. GIGAUULT,
Deputy Minister of Agriculture for Quebec

a liking for country life. The farmers cannot like their profession if it does not enable them to bring up their children properly and give them a good education. Country life should be more attractive than city life. Farmers should be able to live, not in luxury, but at least in comfort, in healthy and roomy houses.

To do this it will be necessary to apply co-operation to the chief agricultural industries, such as the

manufacture and sale of butter, cheese, cured meats, the preparation and sale of canned goods, fruit, poultry, tobacco, eggs and seeds. These co-operative establishments, should be managed by experts of recognized competence, able to turn out products of a superior quality, that will sell at a higher price. Co-operation has already transformed and improved the dairy industry and it will have the same beneficial influence over other branches of agriculture. Without co-operation, agricultural progress will necessarily be slow because we will not have so many experts at our service and the spread of agricultural knowledge will be much less rapid.

In this regard we cannot too often call attention to the wonderful increase in the agricultural production of Denmark, one of the wealthiest countries in the world.

CO-OPERATION IN DENMARK.

In 1881, at the beginning of the co-operative movement, the total value of the exports of Denmark was only 32,000,000 crowns. In 1909 these same exports were valued at 297,000,000 crowns. According to a Danish writer, "the co-operative societies of the country have contrived to improve the quality of the products, and for a number of years Danish farmers have sold their butter, pork and eggs for export at prices which brought them about 30,000,000 crowns per year more than they would have if they had been sold at the average price that similar products obtain in other countries.

The explanation of this development is found in the fact that the number of co-operative agricultural societies has been continually increasing in Denmark. There are now, in Denmark, 551 co-operative societies for the sale of eggs, 34 co-operative slaughter houses, 1,884 breeders' societies, 15 co-operative

federations for the purchase of grain fodder, seeds and fertilizers, 6 large butter exporting societies and a large number of butter factories built with the greatest care, equipped with the most perfect equipment and managed by experts who place on the English market the best butter in the world.

CO-OPERATION IN QUEBEC.

Co-operation has already produced good results in the province of Quebec. The excellent work of the Quebec Co-operative Society of Cheesemakers has been admired by everyone. This society, which was established in 1910 by 31 cheesemakers, now has over 1,200 members, including more than 200 owners of butter and cheese factories. The sales reach a total of about \$2,000,000. Last year the reserve fund was \$5,000. This year the manager hopes to increase this by at least \$8,000. Dairy products are examined by the two general inspectors of the province, Messrs. J. D. Leclair and Elie Bourbeau, and divided into three grades, which are sold separately. The maker is notified of the defects in his products; he is advised in time as to the manner in which they can be eliminated. This organisation has brought about a remarkable improvement in the quality of the products turned out by the members of the society, to such an extent that they won 20 prizes out of a total of 24 in Montreal and 8 out of 10 in Ottawa, in the butter contests.

There are also co-operatives for

canned goods and tobacco, that should obtain equally good results, if they are as well conducted as those of the cheesemakers. Everybody admires the magnificent canned fruit put on the market this year by the co-operative of Kamouraska. This canned fruit was highly praised at the last meeting of the Quebec Pomological Society, held at the Macdonald College.

On the other hand the difficulties that are to be overcome in the conduct of these societies should not be minimized. The officers should be selected with the greatest care and the strictest supervision should be exercised. Employees and officers alike should be honest, sober and competent, and always imbued with a feeling of their responsibility.

Recently, a Commission was appointed in Ireland to inquire into the operations of co-operative societies. The Commission reported that irregular methods had crept into the administration of several societies. The State has been urged, by several witnesses, to take over the management of these associations, in order to stop the abuses and irregularities. The necessity of an active supervision by an authority free from local influences, has been recognized by all.

But whatever these difficulties are, the agricultural community of Canada must encourage co-operation. By so doing and by watching carefully the operations of co-operative societies, it will render a great service to agriculture.

ONTARIO.

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE.

THIS is the story of four stages in agricultural instruction. It is a bright September day. The season of the farmer is drawing to a close. The

harvest is over. The earth has yielded of its fullness and the trees now stand forth in the gorgeous colours of their autumn glory. The flag is flying at the little red school at

the four corners and in the school yard people are gathering. The crowd for the most part is made up of "little people." A'though there are many "grown-ups", it is evident that it is the boys and girls who are "running things." Hither they come bringing their produce grain in the sheaf, corn in the cob, apples, potatoes and turnips, bread and cakes and fancy work, lots of chickens, and here and there a colt or calf - all these and more they bring for it is the day to which they have been looking forward—the day of their

their work. Important in itself, the day is yet more important as the culmination of an achievement. Under the guidance of the agricultural expert, who has been a source of inspiration as well as information, working in co-operation with the teachers, and sometimes the parents, they have taken the seed, planted it, cultivated it, weeded it and watched it grow, and theirs has been the increase. Fair Day, their own Fair Day, brings its rewards in the praises of friends and parents, and perhaps in the prize cheque, but greater rewards than these, cherished though they may be, lie in the enduring fact that by doing they have learned to do.

Scenes like this have been enacted 148 times in this province during the past few months and been actively participated in by 25,000 school children, who have made 75,602 exhibits to the interest and edification of crowds aggregating 95,310. They have been one stage in the agricultural instruction in the province. Cold figures may indicate but they cannot measure the influence in the young minds broadened, ambitions awakened and impulses stirred. As the twig is bent so the tree is inclined



W. BERT ROADHOUSE,
Deputy Minister of Agriculture for Ontario.

School Fair. It is a fair without side-shows or distractions. Far from the maddening crowd of the cities, apart from the allurements of the town, it takes its only atmosphere from its fine rural setting. There is social intercourse among the proud parents, there is laughter and fun among the youngsters at their games while the judging is being done in the big tent over there, but withal the day is dedicated to the boys and girls and

The scene is changed. Cold February snows cover the land, but there is warmth and cheer within the banquet room. Around the festive board sit, say 30 young men, their ages ranging from 18 to 30 years. They are all from the farm, these stalwart thirty but there are also present leading citizens of the town and county, particularly those interested in public and educational work. Good fellowship prevails but beneath it all there is a steady influence of a serious purpose. For four weeks these boys have been together, and under the light and leadership of their district representative, have been studying what books can teach them about their chosen occupation, farming. It has not been all books

for they have taken together little journeys to nearby farms where they have seen the ideal results in stock or otherwise which have been produced to corroborate the theories taught. They have realized perhaps as never before that the earth is not merely cold, inanimate clay but is pulsating with life and is a challenge to research of the greatest minds of the world. It has also been unfolded that an animal is not merely a dumb brute but is a study produced by years of study and calling for further study and attention, if the ideal is to be obtained. Farming has been revealed as an occupation requiring, perhaps not less labour, but certainly less monotony and vastly more intelligence, and inasmuch as an occupation is respected largely in proportion to the intellect it demands, they have conceived a new respect for their calling. And now, as they conclude their course in this pleasant way, listen to words of encouragement and tell their own experiences and hopes, new friendships are cemented, new talents are quickened and new plans are made.

This picture feebly portrays the scene in which 500 young men participated last winter and is prophetic of the scene in which it is confidently expected upwards of one thousand men will participate during the present winter months.

* * *

But again the scene is changed. It is a class at the Ontario Agricultural College. They sit in a large, well-ventilated room in one of the new buildings and receive from men of ripe experience and deep learning the truths of many years of valuable research. Perhaps it is only a few seeds of grain upon which attention is centered for the moment, but the evolution of that seed and its possibilities in the future, both to the individual and the nation, are a vast study in themselves.

Even a brief glance at this scene

reveals the fact that, whether they know it or not, these are the fortunate young men of the agricultural world for they have the time, the money and the inclination to take two years or four years and thus fully equip themselves for their life's work. In such a scene over 400 are participating during the present term and the number is steadily increasing.

* * *

Still again the scene is changed. Unfortunately all do not have the opportunity for extended education, even though they may have the inclination. And so we see in a shed in a little village 150 men of all ages assembled. They are the men who have borne the heat and burden of the day, the men, who coming up from a youth of restricted opportunity, have made the best of their circumstances and are withal among our best citizens. They are yet willing to learn and so all eyes are turned on a fine classy steer in the centre of the ring. An expert explains the good points and then there are many questions and much discussion touching on the type to be aimed at and the breeding and feeding which should be adopted to attain the ideal type. The teachings of the College are thus brought within the reach of the man who cannot reach the College or the school. This scene is duplicated in 100 different sections of the Province and takes in thousands of the men upon the land.

* * *

In these four scenes, briefly and inadequately outlined, an effort has been made to present important phases of agricultural instruction in Ontario. They do not cover all phases and yet they are important. Look them over, consider them carefully, link them together—boyhood, youth, young manhood and maturity—all four are represented and the greatest of these is boyhood. The feature of agricultural instruction of

the past year has been the endeavour to emphasize more and more the importance of reaching and interesting the younger generations, while at the same time not denying to those of mature years the advantages which they could not secure in youth. More work has been done during the past year than during any previous

year, largely because the increased money made available under the Federal Agricultural Instruction Act made more work possible. The opportunity is still great and it is to be hoped that the means and the energy will still continue to somewhat keep pace with the opportunity.

MANITOBA

BY S. A. BEDFORD, DEPUTY MINISTER OF AGRICULTURE.

WHILE it is necessary to keep in view the special war conditions at present prevailing throughout the British Empire, the Manitoba Department of Agriculture feels that in making plans for next year's work we must not overlook the fact that agriculture is a permanent industry upon which general prosperity depends in times of peace; that only in so far as special war plans are based upon fundamental conservation can the recoil of concentrated efforts be absorbed without permanent injury. This war may cease at any time and it is not well, it seems to me, to upset our regular system of agriculture to meet present needs when the same results can be accomplished in a sane manner.

For instance, a certain class would have us sow an unlimited area to wheat whether or not the land is suitable and well prepared. These same unthinking persons, whose loyalty has run away with their judgment, likewise advise us to reduce our herds and flocks in order that we may be in a position to devote more of our time, energy and capital to the development of the grain industry. It is scarcely necessary to state that this would lead to very disastrous results; that our land would become impoverished and infested with noxious weeds and that our system of farming would be so disorganized that it would take years

for us to regain our balance. It is very necessary to keep up our flocks and herds. Crop area can be increased by bringing under cultivation as much as possible of the uncropped land; more permanent results may be expected from improving the yields by more intensive cultivation.

Numerous and much-advertised schemes for farming on an extended scale have been launched in the West during the past forty years, all of which have gone to grief, the shareholders losing their money; but there is no record of intensive farming failures. Innumerable small but highly cultivated farms, successful in every respect, can be pointed out.

The demonstration farms now being organized throughout Manitoba will illustrate the benefits of such farming. The settlers of this province need to be impressed with the importance of utilizing all the by-products of the farm such as small or injured grain, chaff, straw, etc. Our farmers ship thousands of tons of this kind of material out of the country each year, not only giving it away free but even paying freight to Fort William and losing the amount of dockage. At the same time this material is used by our southern and eastern neighbours to fatten poultry, etc., to be shipped back into the province. Manitoba has been depending too long on the run-out native pastures for flocks and herds. These pastures should be

plowed up and reseeded to vigorous varieties of grasses, clovers, alfalfa or fodder corn. We are endeavouring to illustrate the possibilities in this line by planting plots of these useful fodder plants throughout every part of the province and this work will be continued during the coming year.

After Germany, Austria and Turkey have been vanquished, vigorous warfare will still be necessary against our noxious weeds, which are enemies very different to conquer and unless the farmers of the province accom-

plish more than they have in the past, the weeds will soon have full possession of all districts where they abound. It is intended to supplement the work of the department for weed control with the assistance of the field representatives that will be placed in every part of the province during the coming year. These field representatives will keep in close touch with the spread of noxious

weeds and assist in their eradication, acting as lieutenants of the Provincial Noxious Weeds Inspector.

Each year our yield of grain is greatly diminished owing to the impure or low-germinating type of seed grain sown. We are endeavouring to have every farmer test his own seed grain for germination or send a sample of it to the department for test.

Imported alfalfa seed has brought in some new noxious weeds during the past year, so that several newly infested centres have been established. This is particularly true in regard to Russian Thistle mixed with southern-grown alfalfa seed. There will have to be more strict supervision of the importation of this class of seed and, the department will greatly extend the useful work it has already undertaken in the growing of pure and clean alfalfa and other grass and clover seeds.

There is too much haphazard in the system, or lack of system, of cropping western farms and the sooner our farmers realize the advisability of adopting a regular system suited to the requirements of their land and market the better it will be. This is one of the primary objects of the demonstration farm.

Residents of prairie countries are noted for their fondness for fruit and vegetables. At present we import not only the larger fruits that do not grow here, but also thousands of dollars' worth of small fruits which can be successfully grown in the province. One of the department's demonstration farms (at Killarney) will be utilized largely for the purpose of demonstrating Manitoba's possibilities for growing small fruits.

The importation of poultry and eggs has ceased almost completely owing mostly to the department's efforts. We think we are in a very favourable position not only for supplying our own requirements, but also to produce a surplus for export. With our bright clear



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Deputy Minister of Agriculture for Manitoba.

plish more than they have in the past, the weeds will soon have full possession of all districts where they abound. It is intended to supplement the work of the department for weed control with the assistance of the field representatives that will be placed in every part of the province during the coming year. These field representatives will keep in close touch with the spread of noxious

atmosphere and abundance of by-products we should be able to produce eggs and poultry of the highest quality at a minimum of cost. By assisting poultry exhibitions, holding meetings specially devoted to the poultry industry, giving instruction at the Manitoba Agricultural College, etc., we are endeavouring to further the industry.

In the quality and quantity of our dairy products also great improvement has been shown during the past three years, the increase in creamery butter alone being in the neighbourhood of a million pounds each year. There is still room for improvement, however, and we shall continue our present forms of instruction and branch out along new lines as well. In the older portions of the province the herds and flocks are of fairly good quality, but in many of the newer settlements farmers are unable to go to the expense

the provincial authorities and during the coming year we hope to be increasingly useful in this respect; for unless the herds and flocks of the new settlers are improved, a great deal of poor beef will continue to reach the market while the returns from dairy products will be smaller.



TURNIPS ON UNDRAINED LAND IN MANITOBA.

Photograph taken August, 1914, showing a portion of the field, which was not tile drained in 1913. See the places where the turnips were killed out and the tile in place ready to drain the low areas.



TURNIPS ON DRAINED LAND IN MANITOBA.

Photograph taken August, 1914, showing a crop of turnips on a portion of the field, which was tile drained. The crop was a fair one, but the drains had not been in long enough to change the structure of the sub-soil to any extent and the turnips did not root very deep.

of procuring purebred sires. While there has been no desire on the part of the Provincial Government to overlap the good work done by the Live Stock Branch at Ottawa, in the past every assistance has been given that was within the power of

One of the reasons why the flocks of sheep throughout the West have not increased in numbers and size is inadequate fencing. In early days when fencing material was expensive it was impossible for the newer settlers to overcome the difficulty but now that fencing of all kinds is materially reduced in cost we hope to be able to encourage a more general fencing of the farms into fields of various sizes. The very excellent fences put up by this department around the demonstration farms has done much to encourage the right class of fences. This work will be extended in the future.

In the process of selecting our demonstration farms we were greatly impressed with the large areas, even in the older portions of the province, that are occupied by patches of scrub or stone or given over to shallow ponds and other obstructions to cultivation. These are not only un-

sanitary, unsightly and wasteful but they gather snowdrifts in the winter and make the adjoining lands unproductive. During the past year we have cleared a number of these spots on the sites of the demonstration farms and it has proved a good object lesson. This has been particularly true on the farms where it has been found necessary to introduce tile draining. Contrary to the general opinion, tile drains have given good satisfaction where there are no permanent springs.

Although the West does not suffer as severely from the effects of disease or the depredations of insect pests, still the farmer in normal years has prepared himself to combat each of these enemies of the farm. As in the past this department will co-

operate with the Dominion authorities and our own staff at the Agricultural College in recommending steps to be taken for the destruction of injurious insects and for the suppression of diseases of plant life on the farm.

In conclusion I might repeat that under the present exceptional conditions we should endeavour to increase the area devoted to crops and the yield of that area, improving the quality of the products as well. At no time should we rush either into grain or stock but carefully consider the requirements of our land and market and keep an even tenor, thus endeavouring to improve the farm and its products, and following it all up by marketing the products in the best possible manner.

SASKATCHEWAN.

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE.

THE annual Federal grant to Saskatchewan for agricultural instruction is expended through three channels. The first of these is the College of Agriculture which is an integral part of the University of Saskatchewan. Its work falls into three divisions, viz., research work—the solving of problems and finding out of new truths; teaching work carried on at the institution direct; and extension work carried on mainly through the medium of agricultural societies and some of the grain growers associations. As to the plans and purposes of the College of Agriculture for 1915 doubtless its head, Dean Rutherford, will write at an appropriate time.

The second channel is the department of education. Its responsibility in its relation to agriculture is towards the scholars of our elementary and secondary schools and their teachers. As to its policies

for 1915 doubtless its deputy minister will also write in the near future.

The third of these channels is the department of agriculture. Its activities are principally of an administrative character, but sympathetic administration in a new province cannot be entirely severed from instruction. We cannot successfully make, and market a thousand miles away, the butter of some thousands of farmers through co-operatively-owned, but for various reasons government-operated, creameries without instructing patrons in correct dairying practices. We cannot examine and license stallions without instructing their owners and others interested, as to what constitutes soundness and correct conformation in a horse. We cannot sell dairy cows, beef cattle and sheep to struggling farmers on part credit, without afterwards giving some of them instruction in their proper care and management. We cannot

make a successful effort to control the noxious weeds of the province without recognizing that weeds are a by-product of poor farming and that the best way to reduce the by-product is to improve the farming - which, so far as the government is concerned must be done through instruction. We cannot direct or encourage the numerous co-operative activities of our farmers without instructing them in the underlying principles of successful co-operation.



A. F. MANTLE,

Deputy Minister of Agriculture for Saskatchewan.

I do not care to say much at this time as to the plans of the department with reference to agricultural instruction in 1915. As indicated, instruction work, while of paramount importance in the development of our province, is principally carried on by the college, and with us arises more or less out of our administrative work. The nature and extent of the instruction work we do, therefore,

will be dependent to a great extent on the lines which the development of our administrative work follows. We of course have plans for 1915 but "There's many a slip 'twixt the cup and the lip" - especially in war times when young men are enlisting daily - and it will be time enough to announce them as they are put into effect.

Features of the agricultural life in this province during 1914, apart from matters of acreage, crop production, etc., were, the running of our first complete Better Farming Train as a provincial enterprise, the enlisting of the support of many of our rural municipal councils in agricultural betterment - upwards of 50 of them investing some \$40,000 in placing the services of a successful young farmer or undergraduate at the disposal of their ratepayers; and the wonderful expansion in the co-operative activities of our farmers along such lines, especially, as the co-operative or collective marketing of live stock, dairy products and wool, and the purchasing of such farm supplies as binder twine, lumber, fuel and provisions. We hope to run at least one, and perhaps more Better Farming Trains in 1915. We hope to see in 1915 more municipal councils invest larger sums in the services of good men to increase the quantity and improve the quality of the products of the district, lessen the cost of production, and help sweeten rural life. We look to see the energies of our farmers directed more and more to co-operative undertakings, and to see those undertakings ever more wisely planned and efficiently carried through. Lastly we hope to be able to tackle the problems of 1915 in the same spirit as in former years but with increased effectiveness, and to derive as much real satisfaction from the tasks of the year.

ALBERTA.

BY GEO. HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE.

THE Department never was in better shape to start a season's campaign along educational lines. Although the Legislature might have deemed it wise to curtail expenditure on account of the war scare, yet it voted the department more money than ever before for its work. The department, therefore, has planned to carry on its work on a larger and better scale than in past years.

THE NEEDS.

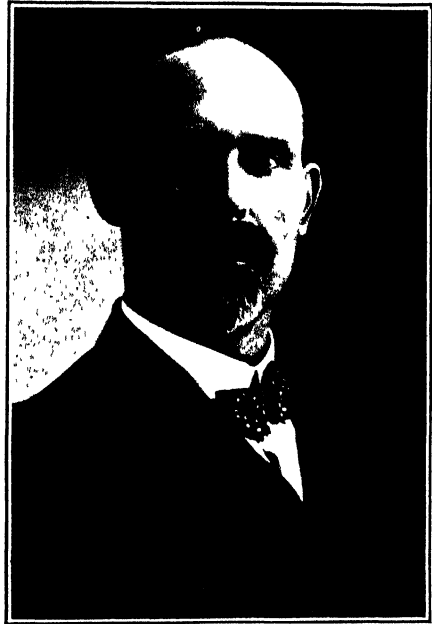
One has only to look around to realize the need for agricultural instruction. People are here from almost every country in the world and a great majority of them from towns and cities. In many cases these people do not know anything about agriculture. All are starting under new conditions of soil and climate and few realize the necessity for haste in all farm operations here on account of the short season. It is because of this great need for instruction that the department has followed a progressive policy along these lines. If the new settler is to make good he must be helped into the right way of doing things—in fact the success of the province depends as a whole on his success.

THE FARMERS' INSTITUTES.

The most direct effort will be made in connection with the farmers' institute work and the agricultural societies. This work will be carried along two lines.

Regular Institute Meetings will be held throughout the province for the discussion of all topics relating to farm work—the cultivation of soil, the eradication of weeds, conservation of moisture, the growing of feed for live stock and the feeding, breeding, care and handling of live stock.

Short Course Schools. The short course schools held in previous years have proven to be a unique method of imparting instruction to the older farmers and their sons who cannot attend the schools of agriculture. Last year, schools of a week's duration were held at each of nine points. While the number has not yet been decided for this year, it is not likely that there will be any decrease in the number. This year five cars of



GEO. HARCOURT, B.S.A.,
Deputy Minister of Agriculture for Alberta

the best stock to be obtained in the province will be used for instruction purposes. These will be stabled in box cars fitted with permanent stalls, owing to the impossibility of securing proper stabling accommodation at small points. Last year the Minister was successful in securing the champion steer at the International Fat Stock Show at Chicago, for use at all of the schools for in-

struction purposes. This year it is likely that the Minister of Agriculture, the Honourable Duncan Marshall, will again be successful in securing some of the best animals from the Guelph Winter Fair for instruction purposes. The idea in these schools is to give instruction on the desirable and undesirable types of conformation of the leading breeds of horses, cattle, sheep and hogs.

The work is done in a large circus tent fitted with elevated seats, where the farmer and his son have an opportunity of learning in a few days many things about animal life and the desirable conformation of the beef animal, of the work horse, the dairy cow, the mutton sheep and the bacon hog, which can be acquired otherwise only through long years of patient experience. Many farmers have said that it was possible for young men to learn in a week at one of these schools what it has taken them a life time to acquire.

Grain is studied in these schools from two standpoints. First, commercially, and secondly, for seed purposes. For the first, samples of the standard grades are carried and students are taught to grade on a commercial basis. For seed purposes the students are taught to judge grain from an entirely different standpoint, as here it is necessary to impress the importance of vitality, purity and freedom from disease and those things which go to make for a good plant. The growth of grasses and clover is also taken under consideration. So also is the cultivation of the soil, the summer fallow, the destruction of weeds and the storing of moisture.

A short course in poultry raising and dairying is given and also talks on veterinary science.

These schools have been the means of disseminating a lot of useful knowledge. They are popular and the attendance large. The aim this year will be to make them more useful than they have ever been.

WOMEN'S INSTITUTES.

A new departure of recent years was the establishment of women's institutes. It is recognized that women in the farm home have as many problems in the house and connected with it as the men have in the stable and on the land outside, and that unless the woman is happy and contented in the home no true progress can be made on the farm. There is no doubt that the discontented woman, handicapped in a hundred ways, has been at the bottom of the movement of the boys from the farm to the cities. The women's work has been deemed so important as to have a special superintendent of its own. A superintendent has recently been appointed, who during the winter months will give lectures on Home Nursing and Sanitation to the Household Science girls at the schools of agriculture and devote the summer months to holding women's institute meetings. Travelling libraries in connection with the women's work have proved very helpful and this work will be continued and enlarged during the year.

AGRICULTURAL SOCIETIES.

Aside from the institute work the department will carry on another class of work through the agricultural societies. This takes the character of supplying official judges to place the awards at the fairs in the live stock, poultry and dairy classes; in grants for seed fairs, good farms and standing fields of grain competitions. Liberal assistance is given to this work by the Seed Branch of the Dominion Department of Agriculture.

SCHOOLS OF AGRICULTURE.

The greater portion of the Federal grant for agricultural instruction will be used to continue the salaries of the teachers and the work of the three schools of agriculture. These

schools are now in their second year and the attendance is exceedingly satisfactory, especially for this year under existing conditions. A full course has been arranged for in Household Science and a special course in Home Nursing and Sanitation. During the whole year the various officers at each school act for the district tributary to each school in much the same way as the district representatives do in Ontario. They hold meetings and advise with farmers whenever possible.

A cow testing competition started last year at Vermilion has proven so successful that a test is now being carried on under the supervision of each school and under the general direction of Mr. S. G. Carlyle, an expert dairyman. This test is creating a great deal of interest and is teaching farmers to know how to tell their good cows from their inferior ones.

THE DEMONSTRATION FARMS.

The demonstration farms are doing a good work in connection with dairying in demonstrating up-to-date methods in feeding dairy stock and the production of milk in a commercial way. Effort will be continued to develop the dual purpose Shorthorn herd as there is a great demand for these animals. The steer feeding experiments are being continued and will be a lesson for each one in this line of work. Methods of cultivation and cropping of various kinds will also carry their full quota of instruction.

Under the guidance of the Dairy Commissioner, the dairy inspectors and instructors will visit all cream-

eries and cheese factories, and the patrons where necessary, giving instruction and advice where needed and use every effort to build up a successful dairy industry. The dairy branch is also assisting in marketing the products of the creameries in a co-operative way, the whole work being carried out on a quality basis.

A very instructive egg-laying competition between twenty pens of different breeds is being conducted at the poultry breeding plant.

The various live stock associations with their annual bull sales, horse shows, poultry shows and the Winter Fair are all being planned to carry educative lessons to those needing same.

In a larger way the farmers' organizations, the United Farmers of Alberta and the Alberta Farmers' Co-operative Elevator Company, are serving as excellent instructors in the principles of co-operation.

In addition to the work outlined in the foregoing there is the constant touch of the various officials of the department with the farming community by bulletin, by letter and by personal contact. As a result of all this effort at instruction some impression must be made. Sometimes the result of the department's efforts seems negative, in fact, discouraging, but a clearer view extending over a number of years shows that a rapid advancement is being made, that the constant effort for improvement is bearing fruit, and that the department has every encouragement to continue to improve and extend the good work, because it is being appreciated.

BRITISH COLUMBIA.

BY W. E. SCOTT, DEPUTY MINISTER OF AGRICULTURE.

THE Empire is at war. Suddenly and without warning and like a bolt from the blue, this greatest of the world's catastrophes came upon us. An autocratic despot has flung his challenge to the world. This challenge has been taken up speedily, and at the present time autocratic militarism is at death grapples with the principles of truth, justice, honour and equality.



W. E. SCOTT,

Deputy Minister of Agriculture for British Columbia.

Who can doubt the final issue? The writing on the wall already points to the side with which victory will rest.

When the news flashed on the world, consternation reigned for a time. People recognized the inevitable dislocation of trade and commerce, and consequent financial difficulties which must inevitably

ensue. After a short time, however dismay gave place to a firm, and quiet resolve to see this war through to the bitter end. The Empire flocked to the Mother Country in her hour of need, and Britishers speedily realized that a grave and responsible duty rested upon them. The response from all parts of the Empire has been splendid.

Nobly indeed, has Canada come to the assistance of the Empire in her hour of peril. Men and money have been sent, and gifts of produce from the Dominion Government and all the Provinces, and Canada stands ready today to make any further sacrifices which may be found necessary to keep the flag of which we are so proud, flying in its rightful place.

How else can Canada best serve the Empire? The answer is obvious. By using her best endeavours to increase agricultural production to the greatest extent possible. Canada has been called the granary of the Empire. Let us then live up to this title. Those of us who, for one cause or another, cannot have the privilege of defending the Empire at the front, must serve her in another way.

The countries of Europe which have been ravaged and devastated by the war are already clamouring for wheat, beef, mutton, etc. Production in the countries affected by the war will be cut in half. From whence then, are the necessary supplies coming? How are these vast multitudes going to be fed?

Great Britain will look to her colonies for the enormous supplies of foodstuffs which she will require. Let us then use our best efforts so that she does not look in vain. France, Russia and Belgium will also be dependent upon supplies from abroad. What an unique opportunity there is for our great Dominion, with its vast

areas suitable for grain growing, and stock raising.

The price of grain is steadily rising. Beef, mutton and pork are also high in price.

Mixed farming offers better opportunities at the present time to farmers than has been the case for many years. Let us therefore get busy and adopt every means in our power, and use all persuasions to get our farmers throughout Canada to grow more wheat, and raise more stock.

Think what it would mean if every farmer in Canada seeded five acres more to wheat than he would have done under ordinary circumstances; if every farmer kept those calves instead of shipping them to the butcher, as their contribution towards increasing the supply available for export.

Let us face the situation squarely. In listening to people talking about the quiet times which prevail, how often do we hear the hackneyed phrase 'bad times engendered by the war'? Is this the reason for the so-called bad times and unemployment at the present time? Let us be candid! No. We are suffering the penalty of our sins—our sins of speculation and inflated values.

Are not many of our manufacturers working over-time to keep pace with the extensive orders for boots, clothes, etc., which have been placed in Canada by Great Britain and our Allies? Is not the farmer who raises the staple articles of food getting the opportunity of his lifetime? Our mineral, timber, and fishery output, whilst it has been lessened to some extent, still goes on.

What we want is more real farmers on the land. Here is a New Years thought for the Federal and Provincial Governments. How can we best get the practical farmer on the land. How can we best educate the inexperienced farmers already on the land, and show them how to materially increase their crop production by using proper and scientific

methods of land preparation, soil cultivation, fertilization, seed selection, etc., how he can best improve his stock by adopting the principles of breeding from selection.

The title of this article is 'A New Year in Agriculture'. Let us adopt these two suggestions as the basic principles on which to carry on our work this year.

In our province, with the many physical difficulties with which we have to contend, such as its widespread areas, its timber lands, and consequent cost of clearing, many serious problems present themselves. These problems however, can, and will be solved.

A comprehensive and well thought out railway policy, such as has been carried out during the past few years, is absolutely essential to the successful exploitation and settling of our vacant lands. Subsidiary to this, but of equal importance, is the question of roads, so that the settler may have easy access to his holding.

Following on this a policy along well thought out and businesslike lines whereby the farmer may, on the security of his holding, obtain a long term loan at a reasonable rate of interest for the proper and legitimate development of his place, might be adopted.

Educative and demonstration work to show the cheapest methods of clearing might also be taken up to good advantage. Finally, educative work along co-operative lines, is essential, so that the farmer may not only keep down his cost of production to the lowest possible extent by purchasing supplies necessary for the production of the finished article in the cheapest market, but may also sell his produce raised by the sweat of his brow, to the best advantage.

It appears to me that the carrying out of these suggestions will go a very long way towards encouraging land settlement in this province.

Having now got the settlers on the land, let us consider how our Depart-

ments of Agriculture can assist them to make the highest success of their undertakings. In considering how we may best do this, let us once and for all dissociate ourselves from the principle of paternalism. This principle is a wrong one. Any right-minded farmer resents it, and the work of any Department of Agriculture will be seriously impaired by its adoption.

An Agricultural Department is primarily an educative institution. Its duties are, by means of its expert officials, by its demonstration and experimental work, by issuing departmental bulletins and circulars prepared by capable experts, and by its other activities, to increase agricultural production by inculcating the principles of scientific farming.

Let us, however, first consider how we may best reach the boy and girl, when they are young, when their minds are receptive, and when they may best be moulded as we wish.

Agriculture should be taught in every school, both normal and high, in the Dominion. A course in agriculture should be optional, but included in the curriculum of all schools.

A boy has every opportunity, when he goes to school, of preparing himself for a mercantile or professional life, but no opportunity is afforded him to prepare himself for the first and most important profession of all—Agriculture.

It is in our schools that the love of nature can be firmly implanted in the boy or girl, the love for growing things, the love for man's noblest and highest occupation—that of agriculture.

Boys' and girls' garden competitions, nature studies, field competitions, is work which may be taken up to good advantage by the Education Departments of the different provinces.

A substantial proportion of the Federal Grant given this province under THE AGRICULTURAL INSTRU-

CTION ACT is used by our Education Department for this purpose.

When the boy leaves the school, he will soon now have the opportunity of taking a proper college course in the Agricultural College which will be started in connection with our Provincial University, or he may elect to take the regular course in agriculture at any of our Canadian Agricultural Colleges.

The day of 'rule of thumb' farming has passed. In these days of keen competition, the farmer, to be successful, must call science to his aid. A knowledge of the underlying principles of agriculture and their proper application is absolutely essential if the highest results are to be obtained.

How often, in walking along a road one sees, say a crop of oats on each side, with only a wire fence dividing them. On one side is a crop of thirty bushels; on the other side fifty. Yet both patches have the same soil conditions, the same air and sunlight. Why then this difference? Look at the man who put in these crops, and you will invariably find that one is a 'rule of thumb' farmer. How can he get into the fifty bushel class? I would answer, by diplomatic persuasion, and by demonstration, and more especially by the latter.

The farmer is an independent man, usually, and rightly too, resents dictatorial advice.

It appears to me that we have to get right in and show him that we can practise what we preach. This can best be accomplished by departmental demonstration plots and orchards. Grow a fifty bushel crop of oats when the farmers round about are only getting thirty, and you will have willing converts. Why? Because you are showing these men how they can put additional dollars into their pockets.

It is with this object in view that we are utilizing a large proportion of the Federal Grant towards the establishment of demonstration plots of five acres in extent, in as many

districts of our province as possible.

Experimental work is also being taken in hand by our Department. It is also in the interests of the farmers that the Government should undertake experimental work as well as demonstration work. The ordinary individual could not afford himself to undertake expensive experimental work in order to find out which are the best crops and the different varieties to grow in his district, more especially in a comparatively new province like ours, where climatic and soil conditions vary so much.

For instance, our experimental work during the past two years has proved conclusively that certain varieties of corn may be grown successfully in districts which had never been considered suitable, and where, if you had proposed to grow corn before this experimental work was undertaken, you would have been considered very foolish. Similarly, our alfalfa plots have clearly shown that this most lucrative fodder crop can be grown to good advantage in many districts which had always been considered unsuitable.

At the beginning of a New Year we all form new resolutions, many of which are not lived up to, and consequently the paving of a certain roadway proceeds apace. Let our New Year's resolution be to do all that in us lies to encourage settlement on our lands, to help those on the land towards increased production, and towards the right solutions of the many difficulties and problems with which they have to contend, so that our Dominion may come into its own, and that our fertile plains and broad valleys may be populated with a happy and contented people engaged in the noblest of occupations - that of bringing forth the fruits of the earth to feed the millions of toilers in our cities. Let us remember that for a country to be prosperous, rural development must precede, not follow, urban development.

Farmers of Canada, do your duty by the Empire, grow more grain, raise more stock.

In conclusion, may I wish the farmers of Canada, a very Happy and Prosperous New Year.

The Educational Department of the Iowa State Dairy Association has, during the past year, conducted a Milk Record Competition for boys and girls in southern Iowa, where the small herds would not permit the organization of Cow Testing Associations. This contest was limited to boys and girls between the ages of 12 and 20 years, and each competitor was required to test the milk of four or more cows for three consecutive months. A supply of monthly sheets, feed standards and pamphlets containing all of the necessary directions for carrying on the work, were furnished to each contestant. They were required to furnish themselves with scales, and wherever possible with Babcock Testers. In case the testers could not be secured the contestant was required to have the creamery or station-man test the samples for butter fat, not less than twice each month. At the end of each month the records were transferred to a summary sheet and the complete data mailed to the office of the Association. The manner of grading the reports was based upon the efforts put forth by the contestants and not the produce of the cows. In addition to the reports an essay, not to exceed 500 words, describing the manner in which the work was carried on and the benefit derived therefrom, was required from each contestant. The following score was used in grading reports: accuracy, 25; number of cows, 15; neatness, 20; completeness of details, 20; essay, 20; perfect score, 100. The prizes, which consisted of choice, pure-bred Guernsey, Jersey and Holstein bull calves, cream separator, cash, milk scale and Babcock Tester complete, and Perfection Babcock Tester complete, were donated by breeders of dairy cattle, publishers of dairy magazines and manufacturers of dairy appliances. Striking results were secured by some of the contestants, and they were encouraged to keep yearly records.

SCHOOL GARDENING AND SCHOOL FAIRS.

NOVA SCOTIA.

BY L. A. DEWOLFE, DIRECTOR, RURAL SCIENCE SCHOOLS.

IN 1913 a few local school Fairs were held, but as they were not under any organized system no one has detailed information concerning them. In two or three sections they were conducted by the teacher, and in two or three other localities by the clergy.

This year, however, under the organized Rural Science movement, we have definite reports of what was done. When we consider that this is the first year of such work, we have every reason to be well pleased with the results.

The attendance at the local Fairs varied from 100 to 700. Possibly the average was about 200.

The Rural Science Department distributed about 20 bushels of seed potatoes, 12 bushels of seed oats, 110 settings of eggs and 15,000 strawberry plants to school children. The products of the first three items were prominent at exhibitions. We hope that next fall the Fairs will see products of the strawberry plants in the form of canned or preserved fruit prepared by school children.

There was a similarity of exhibits at these Fairs. The exhibits made by the children of vegetables, cut flowers, cooking, sewing and poultry, formed the centre of attraction. Other exhibits included collections of pressed plants, weeds, weed seeds, native woods, insects and minerals. Besides these there were exhibits of writing, drawing and various models in wood or cardboard work. The children were encouraged to collect material illustrating local or provincial industries. At several of the Fairs exhibits of vegetables and fruit were also made by the parents,

but were not in competition, however, with those made by the children, but increased the interest taken and the general appearance of the Fair, and sometimes created a spirit of friendly rivalry between the children and parents.

SUMMER INSPECTION.

The children's plots were inspected by the teachers who remained in the school section, and by a committee of local men, when the teachers did not remain. Where no prizes were offered for the plot, inspection was not followed. Children learned that an attractive arrangement and appearance of exhibits counted towards success. Thus will competition become keener and keener year by year.

Fairs were conducted at Heather-ton, St. Andrews, St. Joseph and Georgeville in Antigonish County, and at Glendale, Cape Breton, by the local clergyman. These originated through an interest created by members of the Agricultural College staff who were doing extension work among the farmers of these districts. It is hoped, however, that the teachers in these sections will soon become interested enough to assist the clergy in their good work.

In Halifax and New Glasgow, the Women's Council held successful Flower Shows in connection with the schools. Thus the Rural Science movement is being assisted by very active agencies, all of which tend to make such activities popular and valuable.

During the last year, not including the schools outside of Rural Science control, 60 schools exhibited at

county Fairs; of these 13 held local fairs. Eleven other schools held local Fairs but did not exhibit at County Fairs; thus 13 schools exhibited both locally and at the County Fair, 47 at the County Fair only, 11 exhibited locally only, making a total of 71 schools engaged

in this work, including 1,277 children. The exhibits at local Fairs numbered 3,134 and at County Fairs 1,585. The prize money was obtained from two sources, locally and Government. The amount received locally was \$272.30, from the Government, \$277.90, making a total of \$550.20.

MACDONALD COLLEGE, QUE.

BY M. A. JULL, MANAGER AND LECTURER IN POULTRY.

INDUSTRIAL education is now recognized as the most valuable and permanent means of improving the agricultural industry of our country. The foundation of agriculture rests with the education of the youth of the rural districts, and the schools as well as the public are beginning to appreciate this fact. This has given rise to a permanent demand for industrial education and in different parts of the country considerable thought and effort have been put forward to meet the needs. As yet, however, no country-wide industrial educational system has been evolved and in the meantime the great problem of the educators is to devise a system which will most satisfactorily serve the required purpose.

Having in mind the value of instruction in agriculture, the Poultry Department of Macdonald College, in seeking to interest the pupils of the rural schools of the province in poultry culture, adopted a plan which it was hoped would secure practical and economic results. The rural school children were being interested in an economic occupation.

The plan adopted was to distribute hatching eggs free of cost to school pupils in various parts of the province. In the spring of 1913 there were 100 settings distributed in three counties, and in 1914 there were 425 settings distributed in nine

counties of the province. The distribution was carried out by the college demonstrators located in the various counties, in co-operation with the principals of the academies and the rural school teachers, the demonstrators selecting the most deserving pupils to receive the eggs. The condition upon which the eggs were distributed free was, that each applicant agreed to give the chickens hatched the best of attention and to show all chickens at a school, fair where prizes would be provided. Last year 1480 chickens were shown by the pupils at nine rural school fairs which were held at Shawville, Aylmer, Huntingdon, Howick, Cowansville, Sherbrooke, Ayer's Cliff, Cookshire, and Scotstown. The prize list was arranged to stimulate keen competition and to provide as large a number of prizes as consistent with the object in view.

The results of this extension work are very gratifying. It is essentially an educational propaganda designed for a practical purpose and perhaps it may prove one of the best mediums of introducing the subject of agriculture into the educational curriculum. Aside from the educational service rendered other purposes are served: interest in the poultry industry, among the young and old, is awakened; better methods of husbandry are being adopted; the quality of stock in the district

is improved; community breeding centres are being established and the poultry industry is being made more profitable.

Brief summary reports have been received by THE AGRICULTURAL GAZETTE, from the Macdonald College Demonstrators, of 7 School Fairs held in 1914 under their supervision. These reports show that fairs were

held in 5 centres embracing over 60 schools. The materials distributed and supplied by the Macdonald Extension Branch consisted in addition to the settings of eggs, wheat, oats, barley, corn, potatoes, and flower seeds. The prize money was furnished through local sources and by Macdonald College.

ONTARIO.

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE.

THE Rural School Fair movement in Ontario, since its inauguration in 1912, has been marked by rapid development, ever growing interest and many striking evidences of its value as a means of interesting the boys and girls on the farm. This development can readily be seen by a comparison of figures for the last three years; in 1912, 25 rural school fairs were held in 12 counties; in 1913, 69 fairs were held in 31 counties including the children in 531 schools; there were 18,652 entries and a total attendance of 33,375. Reports for 1914 show that 148 fairs were held in 37 counties taking in the children in 1,391 schools; there were 75,602 entries and an attendance, including children and adults, of 95,310; number of plots, 23,872; number of settings of eggs distributed, 4,074.

In the March issue of THE AGRICULTURAL GAZETTE, (Vol. 1, No. 3, page 175), an article was printed giving a statement of the history and 'modus operandi,' of the Rural School Fairs in this province, and hence it is not necessary here to do more than refer to the work during the past year.

As in previous years the children were supplied with seed material and given printed instructions for planting and cultivation. The varieties varied somewhat, depending on the

locality in which the School Fair was held, but in every instance only first class seed was used and a special effort was made to introduce new varieties that were recognized as the



RURAL SCHOOL FAIR BOARD, LANCASTER, ONTARIO, 1914.

most suitable. The O.A.C. No. 72 oats recently originated at the Ontario Agricultural College, and O.A.C. No. 21 Barley were distributed very largely over the whole province. The poultry section of the School Fairs has become a very attractive feature with both the boys and the girls. With the exception of a few centres where other varieties of poultry predominate, the department has endeavoured to introduce the bred-to-lay Barred Rocks origi-

nated at the Ontario Agricultural College. This year over 48,000 eggs of this strain were supplied and at several of the fairs as many as 400 birds were on exhibit.

EXHIBITS AND FEATURES.

There are to be found at every School Fair exhibits of grains, roots, vegetables, which must be produced from the seed supplied, and grown under the direction of the district representative; also poultry produced from the eggs supplied by the department; insect and weed collections; handy home devices; cooking and sewing exhibits, and essays. The children are also encouraged to exhibit calves and colts but more emphasis is put upon the control the boy or girl has over the animal than upon the confirmation or quality. Each animal must be shown on the halter and exhibited by the child. The manner in which some of the children perform with these young animals shows striking evidence of the value of this feature. A novel feature introduced at a number of fairs this year was a chicken plucking contest, which tested the children's skill in this line and also proved very spectacular. A very interesting feature and one of undoubted value to those taking part was the public speaking contest held at several of the fairs. Wherever a contest of this sort was held there was little difficulty in securing entries and the children acquitted themselves admirably. This feature might well have a place in the prize list of every school fair.

Not the least important feature of the School Fair movement is the inspection of the children's plots during the growing season. As a special inducement for the children to follow the instructions of the department, prizes are awarded for the best kept plots. The following is a sample score card used by district representatives:-

ONTARIO DEPARTMENT OF AGRICULTURE. PRINCE EDWARD COUNTY BRANCH. HOME GARDEN COMPETITION.

SCORE CARD.

Name of Pupil		
P.O. Address		
Township		
School Section		
Teacher		
	Possible Score.	Judge's Score.
1. General appearance:		
(a) Vigour and uniformity of growth	10	
(b) Stand of plants	5	
(c) Care in laying out plots and seeding	20	
2. Freedom from weeds	25	
3. Freedom from insects, blight, rust, smut, etc.	15	
4. Cultivation and general care during summer	25	
Total	100	

Instructor's Remarks

Date

This inspection enables the district representative to keep closely in touch with each child's work and to render timely assistance with regard to cultivation and combatting insect pests and plant diseases. This inspection also affords the district representative a splendid opportunity of getting the parents interested in the new methods. The extent of this part of the work will be seen from the fact that nearly 24,000 children's plots were inspected during the summer of 1914.

FINANCIAL ASSISTANCE.

Up to the present time the Rural School Fairs have depended entirely upon local funds for prize money. County and townships alike have made liberal contributions. Each school board is asked to make a grant of from \$3 to \$5; Women's Insti-

tutes, Farmers' Clubs and private individuals have also assisted in a very liberal manner. All other expenses are met by the Department of Agriculture, and are paid out of the



MASTER ERNEST MARTIN, THORNDALE,
ONTARIO, IN HIS PLOT OF CORN.

Winner of prize for best kept plot in a School Fair
Competition

provincial grant of over \$75,000, and of the federal grant of \$100,000 to district representatives. The federal grant has made various lines of work possible, including the school fairs, that could not have been undertaken without this assistance. With one exception no important changes have been made during the past year in the organization and methods of conducting the fairs.

ORGANIZATION.

The department has endeavoured to have the children look upon the School Fair as a children's organization and have therefore decided to hold School Fairs separate and distinct from township or county agricultural fairs. Where they have been held previously in conjunction with other fairs, the children's exhibits have undoubtedly attracted a great deal of attention but the interest maintained by the children is not to be compared with a school fair where the children are made to feel that they are responsible (under direction of the district representative) for the successful carrying out of the fair.

A report of the school fair work in Ontario would not be complete without making reference to the hearty and splendid co-operation of not only the children themselves but also of the parents, school trustees, inspectors and lastly, perhaps the most important of all, the teachers.

MANITOBA.

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURE, DEPARTMENT OF EDUCATION

SCHOOL GARDENING.

THE school garden as a feature in the education of the Manitoba youth is rapidly becoming very important.

According to reports thus far, upwards of 400 rural and town schools this year have had school gardens worthy of the name; this

is an increase of about 100 per cent over the number of last year. Some city and large town schools have had children's home gardens under the supervision of the teachers.

As an encouragement and assistance to schools wishing to carry on gardening, the Department of Education has distributed during the

year, the following material, on application:—

During September, 1913, over 5000 bulbs to about 50 schools.

During the winter, about 600 grain germination testers, and 130 egg-testers to 130 schools.

In April, to about 300 schools, 8400 packets of vegetable and flower seeds, 4,415 packets of various grains for childrens plots, 1,054 parcels of potatoes (3 varieties) for childrens plots, 60 lb. alfalfa seed for small plots on the school ground, 12,000 seedlings, etc., for wind-breaks about the school ground, 5,264 shade trees and ornamental shrubs, 618 perennial roots.

Many schools obtained their material locally, and some bought it wholesale; the amount of such material has not been reported.

SCHOOL FAIRS.

An apparent out-growth of gardening and agricultural work in the schools, and as an encouragement thereto, School Fairs are being held in many districts.

The Agricultural Societies for many years have tried to encourage school work by giving prizes for maps, writing, drawing, etc., at their annual fairs. At most fairs—Winnipeg, Brandon and Portage la Prairie excepted the interest shown in the school display has been very small, and the exhibit has been neither a credit to the work of the schools, nor much satisfaction to the Fair Board.

Last year, a few Fair Boards introduced new features for school children such as manual training work, sewing, flowers, vegetables, grain, poultry into their prize lists.

Boys and Girls' Clubs for potatoes, corn and poultry raising had been formed, and in connection with these Clubs, an exhibition was held. At some of these (eight in all) there was an exhibit of special lines of school work, e.g., wood-work,

sewing, vegetables, grains, flowers.

About twelve of the special exhibitions of school work were held in 1914, and so great was their success that the news spread throughout the Province, resulting in a greatly increased number being held in 1914.

Some of these fairs are held under the direction of the Boys' and Girls' Club, others under a Junior Agricultural Society, some under a committee of the teachers and trustees of the municipality, and others under the teacher and trustees of the individual school.

In connection with some School Fairs, sports were held during the day, and a concert in the evening.

According to reports to date, fully 35 school fairs have been held this year, including exhibits from about 100 schools. There were entries from upwards of 2500 children, and the attendance has been approximately computed at 10,000.

The Departments of Education and Agriculture distributed approximately the following:

GRAINS:— 5000 packets for small plots.

Wheat, 3 varieties: Red Fife, Marquis, Prelude.

Oats, 3 varieties: Abundance, Banner, Daubeney.

Barley, 3 varieties: Manchuria, O.A.C. No. 21, Canada, Thorpe.

Corn, 3 varieties: White Cory, N. Dakota, Flint, Longfellow, N.W. Dent.

Alfalfa, 60 lb.

VEGETABLES AND FLOWERS:— 8,400 small packets.

90 bushels potatoes: Early Bove, Table Talk, Peacock's Surprise.

EGGS: 500 dozen: Barred Rocks, White Leghorn, White Wyandotte, Rhode Island Red, Buff Orpington.

The material exhibited differed widely, but generally included vegetables, flowers, grains, wood-work, sewing, cooking, collections of weeds, insects, weed seeds, compositions, maps, writing, etc.

There were special agricultural exhibits at many Fairs of poultry, potatoes, fodder corn, and of pigs at a few places.

At some schools there was regular inspection and scoring of the childrens' plots and animals, but as this involves considerable work on the part of the teachers, it has not become very general as yet, especially during the holidays. One teacher personally visited each boy monthly taking part in the pig competition and weighed his pig. Each boy was required to keep records of kinds of feed, amounts fed, and methods of feeding. To furnish prize money for these fairs, the following amounts were obtained:

(1) Government	\$322 00
(2) Local organizations	686 00
(3) Private individuals	598 00
Total	\$1,606 00

The important changes in the conducting of fairs in 1914 were that in many cases each has included a number of schools, under the management of a Junior Agricultural Society, or a Municipal Committee, consisting of the teachers, the senior pupils, and a member of each School Board of the Municipality. Where a number of schools have united, the latter organization seems to have been the most effective, and an effort is being made to establish an annual School Fair at each Municipal Centre.

SASKATCHEWAN.

BY S. E. GREENWAY, DIRECTOR, AGRICULTURAL EXTENSION WORK.

SCHOOL Gardening as a propaganda has not been placed on an organized basis in the province of Saskatchewan, but it is being enthusiastically fostered in many diverse sections of the province by various agencies. Chief among these are district teachers' associations actively aided by the division school inspectors. Ten of these memorialized for full information as to the work in their respective inspectorates were unable to give any details. The reports of those having information on the subjects are appended in full. The remainder without exception have made an effort to interest school trustees and municipal bodies in the work and have met with the most favourable response short of actual participation in the work, which could not be begun owing to lateness and unpreparedness. In the majority of the districts in Saskatchewan, of which there are nearly 4,000, lack of fencing is a discouraging feature.

R. L. Meadows, B.A., Principal of the Qu'Appelle High and Public schools reporting at the request of Inspector J. Duff says:

"School gardening is beginning to demand more attention throughout this district. At the convention of the Central Saskatchewan Teachers' Association held at Indian Head last year the subject was not given a leading position. This year during the convention and exhibition held in South Qu'Appelle a more decided stand was taken upon the matter.

"In 1913 there was one fair held in this district the exhibitors being confined to the public school district of Qu'Appelle. This year there has been one at Qu'Appelle, but instead of being local it was open to all schools in the district comprising the Central Saskatchewan teachers' association which extends east to Grenfell, west to Regina, north to Balcarres, south to schools ten to twenty miles south of the main line of the C.P.R. This year exhibits were entered from Qu'Appelle, Indian Head, Grenfell, Vernon and Edgeley. There were about 300 entries from the different schools. There were about 125 competitors. The attendance was approximately 400.

"Owing to a postponement due to an outbreak of contagious disease the exhibition was held on October 8 and 9 instead of September 17 and 18. The vegetable

exhibits might otherwise have been greater. Also it should be noted that a dry season and an early frost affected the exhibit. Vegetables, from the garden, domestic manufactures, pressed plants, raffia, rattan and needle work, writing, drawing and plasticine work and flowers constituted the greater part of the exhibit. The Qu'Appelle Homemakers' Club donated \$5 special prizes for darning and patching.

"The gardens at Qu'Appelle did not receive a summer inspection this year. During 1913 the gardens were judged about the middle of July and later about the first of September.

"The provincial Department of Education contributed by inserting an advertisement in the prize list. The Qu'Appelle town council voted \$25 and the Qu'Appelle school board \$25. Business men in Qu'Appelle and a few from outside points gave by inserting advertisements. After expenses were paid there was about \$55 available for the payment of prizes.

"The moving spirits this year consisted of a committee from the Qu'Appelle school board and the principal of the school. Next year a special committee has charge, the committee being appointed by the Central Saskatchewan teachers' association."

A. Kennedy, M. A., Weyburn Inspectorate writes as follows:

"During 1914 one fair was held in this inspectorate, at Weyburn, September 17 and 18. Entry was open to all schools and eight schools took part. The chief difficulty encountered was that of distance and getting the exhibits to and from the fair. The pupils of the eight schools made over 700 entries in the several classes. The exhibition was held in connection with the teachers' convention for the district and the attendance included 100 teachers and as many parents and children. The seeds were purchased or obtained from seed firms or individuals. Much of the seed required by the pupils of the Weyburn schools was purchased from the Flower Mission, Cleveland, Ohio. The awards made included 72 firsts and 50 seconds. The prizes which were composed chiefly of good literature were provided by the school boards interested and by revenue from advertisements in the premium list."

Mr. J. A. Hiebert, teacher, Laird School District, took the best grain available from the local grain elevators, securing as many varieties as possible of wheat, oats and corn each, giving not more than a pint of each to each school.

Vegetables were shown as follows: potatoes, parsnips, turnips, carrots,

cucumbers, cabbage, radish, peas, beans, onions, beets, pumpkins, cantaloupes, kohlrabi, cauliflower, watermelons and tomatoes; five or six of each variety.

The exhibits at the fair were divided into three classes: (1) Vegetables, including cereals; (2) Flowers, wild and tame, also house plants; (3) Construction work, done by the pupils during school year. A few of the things under this item were: hammocks, Indian huts, raffia weaving, log house, rude centre-tables, Indian canoe, doll's house, sewing, drawings, writings compositions, maps and plasticine.

Each teacher and school of the district had to look after their own affairs, with the help of the trustees, preparing soil, planting and weeding. Garden exhibits were raised mostly on the school grounds. Garden plots were cared for by teachers and pupils during summer holidays.

Prize money was raised as follows: Local organization about \$100.00, and by individuals about \$50.00.

Eight schools in Lost River municipality competed for generous cash prizes for the following exhibits: best individual collection of garden produce; best school collection of noxious weeds; contest in identification of weeds; contest in identification of weed seeds; best school exhibit of garden produce; individual collection of noxious weeds; best school collection of noxious weed seeds. The prizes offered were \$45 in cash and a silver cup donated by the municipality and the trustees.

A school garden without the incentive of prizes arranged by the teacher of Bergheim school, and by him conducted for two years is worthy of passing mention. J. D. Williams, a young Welshman, went into this district, which is composed almost wholly of Russian Germans, in the spring of 1912. He borrowed a yoke of oxen and a plough and ploughed up the school ground, an uneven, stony, and rather unpromis-

ing field of labour. The ground was well prepared, a garden plot and a seed selection plot arranged for each child; 1,400 trees were planted and $1\frac{1}{2}$ acre seeded to alfalfa. In order to do this it was necessary to bring a great quantity of good soil from a bluff 300 yards distant. This was done with a wheel-barrow guided by the teacher and drawn by the children. Lessons on the laying out of the plots and the selection of seed were given to the children. Observations were taken every day as to the weather, precipitation, if any, and growth of the plants. Lessons on plant life varied the work. The children were urged to pull every weed they saw and bring it to the school. Uncommon plants were treated likewise and classified. The result of this painstaking work over two years made the children better conversant with the principle of seed selection and growth, and more familiar with noxious weeds than any community of children or grownups which it has been my privilege to visit. The hard work was varied by the singing of Canadian patriotic songs accompanied by the teacher on an organ provided by the fruits of the childrens' gardens. It would seem that this is the most effective work and the most effective way of working toward the Canadianizing of the many hundreds of thousands of foreign born who live in Canada. The worth of the work and the grip which it has on the children is shown by the fact that while the parents of the children

had the teacher dismissed because he "hitched them to the wheel barrow" (at their own instigation) they continue to hitch themselves to the wheel barrow in order to bring in more of the good soil. The garden work is being continued with a will.

Apart from the good work which is being done in the manner above noted the agricultural societies of the province of which there are 115 are devoting a large portion of their money and energy towards childrens' exhibits at the fairs. In 1914 of 42 societies reporting, the amount shown to have been offered in prizes at the 42 fairs for childrens' work was \$1489.25. There were 2,294 entries in competition for this money, the average number of entries being 54 and the average amount of money offered \$35.50. The society at Yorkton had an entry list of 607 in childrens' work and offered over \$90 in prizes. In this way a great deal of good work is being accomplished among the school children of the province, especially as the societies are putting much thought into the subject and are getting away from the old fashioned map and copy book plan of competition for the more up to date and useful work in agricultural and domestic art.

In addition to the work at the exhibitions the boys and girls are being encouraged by the offer of prizes to be competed for at the seed fairs and standing crop competitions of which there are usually about 100 held annually.

SCHOOL GARDEN WORK AT SOURIS SCHOOL, WEYBURN.

Under the direction of the principal of the school, Mr. Stanley Phillips, a considerable plot of ground was plowed in the spring of 1914 and afterwards fenced. At that time pupils of Grades I to V only were accommodated in the four class

rooms of the Souris school. Under supervision of the teachers these pupils surveyed the garden as a rural municipality, a section being represented by a plot 6 feet long and 6 feet wide. Each senior pupil had charge of a plot twice this size while a junior

pupil was responsible for a plot representing a section. The roads were represented by paths 2 and 3 feet wide. Implements and seeds were purchased by the board for the use of the pupils who were given considerable freedom in the matter of choice of vegetable and flower seeds and the arrangement of the plants in the plots.

A portion of the garden was planted with trees while another portion was planted with some seven hundred shrubs presented by the Provincial Landscape Architect, Mr Ross. Along one side of the garden a community farm was operated, being planted with several kinds of grain and the larger vegetables. Not the least interesting feature is to be found in the fact that the garden was managed by a Municipal Council, with officers elected by and from the pupils in the school. This provided

valuable lessons in civics. The interest, not only of the children but also of the parents, was sustained throughout the season. Many visitors from the city and neighbouring rural school districts as well as from other parts of the province expressed their appreciation of the undertaking. Dr. R. A. Wilson, principal of the Normal School at Regina, visited the garden in May and again in September. The Hon. Walter Scott, Premier and Minister of Education, honoured the school by visiting the garden on July 24th and investigating the whole manner of operation and management.

Inspector Kennedy in his report with reference to the above makes the following remark: "I believe this school garden will rank as one of the best school gardens operated in America during 1914."

ALBERTA.

James C. Millar, Director of Technical Education, writes to *The AGRICULTURAL GAZETTE* as follows:

"In a few cases local rural schools have made exhibits at the regular Agricultural Fairs, and in our cities,

the city schools have usually had some exhibits at the annual exhibitions. As far as the Government is concerned this matter has received no special attention."

The French Minister of Public Instruction, in an address recently sent to the teachers of France, says: -

"A nation may be rich enough to spend millions in killing its enemies; but no nation is rich enough to neglect the education of its children."

FIELD CROP COMPETITIONS AND SEED FAIRS.

PRINCE EDWARD ISLAND.

BY THEODORE ROSS, B.A., B.S.A., SECRETARY FOR AGRICULTURE.

THE number of Agricultural Societies that have organized and conducted field crop competitions during each year from their inception and crops grown in competition are shown in the following table:

Year.	Wheat.	Oats.	Barley.	Total.
1909	3	3		6
1910	6	6	6	18
1911	6	6	6	18
1912	6	6	6	18
1913	6	6	6	18
1914	9	9	9	27

FINANCIAL CONTRIBUTIONS.

The total amount of money contributed towards the organization and maintenance of Field Crop Competitions, apart from salaries and expenses of administrative officers:

1913.		
(a)	\$389.99.	
(b)	Prizes	\$198 51
	Printing announcements	18 20
	Printing report of competition	35 10
	Postage	20 00
	Judges' expenses	108 58
		\$380 39
1914.		
(a)	\$652.67.	
(b)	Prizes	\$326 33
	Printing announcements	11 50
	Postage	15 00
	Judge's expenses	211 80
		\$564 30

The total amount of money contributed towards the organization and maintenance of Seed Fairs and provincial Seed Exhibitions:

1913.		
(a)	Seed Fairs	\$ 512 34
(b)	"	444 96
(c)	"	1,159 37
		\$2,116 77
1914.		
(a)	Seed Fairs	\$ 510 20
(b)	"	771 38
(c)	"	803 81
		\$2,085 39

NOTE - (a) Contributed by the Seed Branch of the Federal Department of Agriculture, (b) Contributed by the Provincial Department of Agriculture, (c) Contributed by the local agricultural organization conducting the competition

DISTRIBUTION OF GRAIN.

The department distributes the reports of the competitions to Secretaries of Agricultural Societies in Nova Scotia, New Brunswick and P. E. Island and to others who may apply for it. The judges are also instructed to inspect any fields that are entered in the competitions and also any other fields of grain the competitor may wish to have inspected. A special book is carried for this purpose and notes made regarding the crop. Any grain that scores not less than 19½ points out of the 20 for "freedom from other varieties and other kinds of grain" may be inspected in the bags and a certificate of quality given. As a result of these competitions the Banner Oat Club was formed in 1912 for the purpose of encouraging the growth of Banner oats, and of securing a good market for the seeds. The club undertakes to market the oats of members of this club that has been examined in the field and scores sufficiently high and shows a germination test of not less than 95 per cent, and that is free from weed seeds.

The Department of Agriculture provides an Inspector free of cost to the Banner Oat Club.

JUDGES

The judges are all men who have had some training in the Agricultural Colleges. They are assembled at the Experimental Farm for one or two days before their work begins to secure uniformity in judging.

EDUCATIONAL VALUE AND RESULTS.

(a) Nearly every farmer endeavours

to secure the largest, plumpest seed, true to name.

(b) The importance of good cultivation has been brought out by the standing fields of grain competitions.

(c) Whereas car loads, both of seed wheat and of seed oats were brought to the province before these competitions were held and very little sold for seed, there is now not more than about a car load of oats and wheat altogether brought here and about 250,000 bushels are exported annually for seed to Nova Scotia and New Brunswick and Quebec.

NEW BRUNSWICK.

BY A. G. TURNEY, B.S.A., ACTING SECRETARY FOR AGRICULTURE.

THE progress of the Field Crop Competition movement in New Brunswick is shown in the following: In 1909 competitions were held by 1 agricultural society, in 1910 by 4, in 1911 by 5, in 1912 by 5, in 1913 by 7 and in 1914 by 6. Competitions were also arranged for and held by the

Department of Agriculture in 1913 and 1914. These competitions have been held in the counties of Northumberland, Westmoreland, Kings, Victoria, York, Carleton, Kent and Gloucester.

The number of competitions conducted in 1913 and 1914 in the various field crops are as follows:

CROP.	1913.	Entries.	1914.	
	No. of Competitions.		No. of Competitions.	Entries.
Wheat	7	125	7	154
Oats	8	218	8	186
Barley	4	45	2	12
Buckwheat	1	23	2	22
Potatoes	5	98	7	225
Turnips	6	95	7	113
	31	604	33	712

The total amount of money contributed towards the organization and maintenance of Field Crop

Competitions, apart from salaries and expenses of administrative officers, is as follows:—

YEAR.	By Seed Branch of Fed'l Dept. of Agriculture.	By Prov. Dept. of Agriculture.	By Society Conducting Competition.
1909	None	\$100 00	\$58 00
1910	"	300 00	53 50
1911	"	500 00	79 00
1912	\$414 00	500 00	None
1913	608 66	625 34	"
1914	1,284 00	656.96	"
	\$2,306.66	\$2,682.30	\$190 50

QUEBEC

BY OSCAR LESSARD, SECRETARY OF THE COUNCIL OF AGRICULTURE.

FIELD Crop Competitions in the province of Quebec were first held by agricultural societies in 1908. In that year competitions were held by 18 societies, in 1909 by 43, in 1910 by 45, in 1911 by 54, in 1912 by 61, in 1913 by 61 and in 1914 by 68.

In 1913 and 1914, competitions were held for the following crops:

Branch of the Dominion Department of Agriculture. The salaries and expenses of the judges are paid by the Provincial Government.

PROVINCIAL EXHIBITION.

A provincial exhibition of seed grain has been held every year in the city of Quebec since 1910. This



QUEBEC FIELD CROP COMPETITION JUDGES OF 1914 RECEIVING INSTRUCTION AT MACDONALD COLLEGE.

	1913	1914
Wheat	3	3
Oats	48	46
Barley	1	1
Corn	3	3
Potatoes	5	10
Clover and timothy seed	1	5
Total	61	68

A grant of \$75 is given to each competition and distributed in prizes to successful competitors. One-third of this grant is paid by the Provincial Government and the remaining two-thirds by the Seed

provincial exhibition is divided into three classes, as follows:

CLASS I.—Open to all competitors.

CLASS II.—Open only to those competitors who have secured prizes in the standing crops competitions held by Agricultural Societies.

CLASS III.—Open only to the members of the Canadian Seed Growers' Association.

The total amount offered in prizes at each provincial exhibition is about \$1500. Two-thirds of this sum (up

to \$600) is paid by the Dominion Government (Seed Branch), the rest is paid by the Provincial Government. The organization and administration expenses, as well as the judges' salaries and expenses of the judges are paid by the Provincial Government. The shipping charges for the grain sent to the exhibition are also paid by the latter. An auction sale of grain exhibits is held during the exhibition. The grain that is not sold is returned at the expense of exhibitors.

In addition to the provincial exhibition, local seed grain fairs are also held every year by a number of Agricultural Societies. In 1914, 23 fairs of this kind were held. A grant

of \$75 is given to each one of these local fairs. Two-thirds of this grant is paid by the Dominion Government (Seed Branch) and one-third by the Provincial Government. The salary and expenses of the judges are paid by the Provincial Government.

The judges for the standing crops competitions, the seed grain provincial exhibition and local exhibitions held by agricultural societies are under the direction of a seed grain inspector from Ottawa, furnished free of charge by the Dominion Seed Branch. Before starting on their work of judging, the judges take a two days' course under the seed inspector at Ottawa, so as to prepare themselves for their work.

ONTARIO.

BY J. LOCKIE WILSON, SUPT., AGRICULTURAL SOCIETIES.

Field Crop Competitions were inaugurated in 1907 and began in a small way, 10 societies taking up the work and receiving a grant of \$1,000. Three-hundred and twenty-five farmers entered the competition, and 3,000 acres of crops were judged, 5 judges being employed for this work. For the first few years entry could be made in only one crop, but the number of crops has now been increased to three. The acreage of the fields entered in 1914 was about 60,000, the number of farmers entered in all the crops 6,400, and the grants from the

Provincial and Federal Governments amounted to \$25,500. The maximum Provincial Grant to each Agricultural Society for the three crops total \$150, on condition that the society supplement this with \$110, whose expenses are all paid by the Ontario Government. In addition to these grants large prizes are offered at the Canadian National and Central Canada Exhibitions, and Guelph and Ottawa Winter Fairs, for which only the first five prize winners in the Field Crop Competitions are eligible.

FIELD CROP COMPETITIONS IN ONTARIO.

YEAR.	Societies.	Competitors.	Acres.	Amount of Provincial Grant.	Amount of Dominion Grant.
1907	10	325	3,000	\$1,500	
1908	46	650	6,000	3,500	
1909	77	1,200	20,000	4,000	
1910	110	1,650	26,000	7,500	
1911	104	1,800	28,000	8,500	
1912	153	3,000	30,000	8,500	
1913	159	3,500	35,000	8,500	10,000
1914	258	6,400	60,000	8,500	16,500

NUMBER OF COMPETITIONS IN 1913 AND 1914.		By Seed Branch	\$749
		" Provincial Dept. of Agriculture	770
		" Agricultural Societies at local fairs	534
	1913 1914		
Wheat	6 12		
Oats..	111 143		
Barley	8 18		
Peas	1 5		
Corn	20 35		
Potatoes	12 35		
Turnips	4		
Mangels	4		
Sugar Beets	1 1		
Clover	1 2		
	159 259		

DISTRIBUTION OF PRIZE GRAIN.

Grain winning prizes is retained by the Provincial Department and distributed through agricultural representatives to farmers, who next year return a similar quantity which in turn, is handed to other farmers on like conditions.

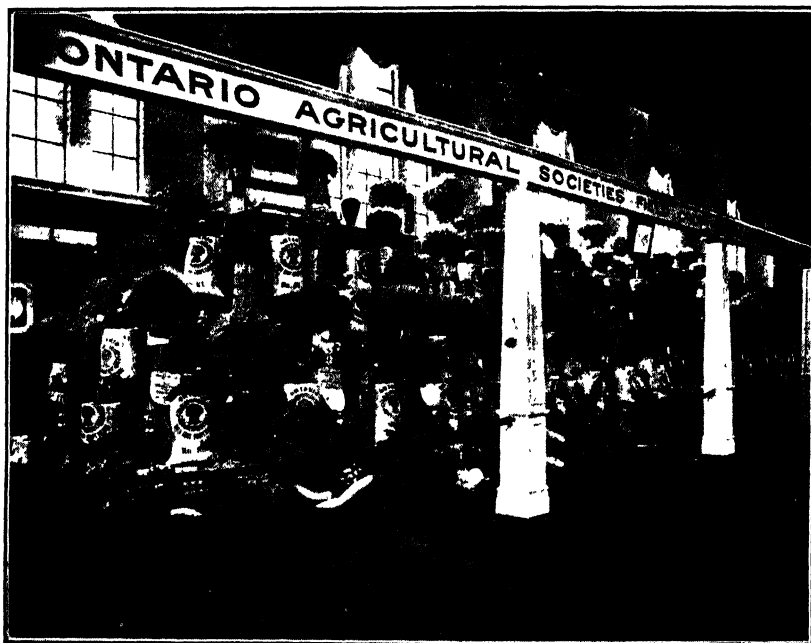


EXHIBIT AT THE NATIONAL EXHIBITION, TORONTO, 1914.

FINANCIAL CONTRIBUTIONS.

Towards organization and maintenance of Field Crop Competitions apart from salaries and expenses of administrative officers

By Seed Branch of Federal Dept. of Agriculture	\$13,570
" Provincial Dept. of Agriculture	8,000
" Agricultural Societies	7,000

Contributed towards Seed Fairs and Provincial Seed Exhibitions:

JUDGES.

Judges attend a short course each year in July at Guelph Agricultural College and the Central Experimental Farm, Ottawa.

RESULTS.

Increased interest shown by farmers as result of competitions and high prices realized by successful winners for their grain; better cultivation and cleaner fields and stricter attention to the time of sowing and harvesting grains are much in evidence.

MANITOBA.

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE.

THERE can be no question that the educational value of field crop competitions and seed-grain fairs is great. The achievements of such men as Seagar Wheeler, Thomas Maynard, of Deloraine, and others who have made systematic effort, is good evidence. It is doubtful if any single influence that has been brought to bear in Manitoba has done more to stimulate an interest in good farm



S. A. BEDFORD, DEPUTY MINISTER OF AGRICULTURE FOR MANITOBA, SCORING FIELD OF GRAIN IN GOOD FARMING COMPETITION.

management than the Good Farming Competitions. Such a competition in any locality means a general clean-up of that locality; from it weather-stained barns emerge bright with paint, cluttered roadways clean swept, hedges and flowers improve the farmstead surroundings and the general effect upon the whole neighbourhood is one of corresponding uplift. Hardware merchants report remarkable increases in the sale of paint wherever such competitions are held, an indication that the interest taken is of the keenest.

Mention was made in the AGRICULTURAL GAZETTE, Vol. I. No. 11,

page 921, of the system of field representatives to be established by the Manitoba Department of Agriculture in 1915. It is confidently expected that as soon as the plan is fairly under way there will be larger and even more successful competitions held than ever before. Close supervision by persons residing in the district will do much to encourage the farmers to take part and keep up the general interest.

The past season has been particularly unfavourable for competitions of the above sort and interest has concentrated rather upon plowing matches, demonstration trains, boys' and girls' clubs and other phases of agricultural instruction. While the Manitoba agricultural societies have taken considerable interest in field crop competitions, seed fairs etc., in past years, 1913-14 shows a falling-off, for the reasons stated. During 1913 only six good farming competitions and thirty-three seed grain fairs were held. Some societies hold standing grain competitions in connection with their good farming competition.

During 1913 the total cash prizes for standing grain and good farming competitions amounted to \$426.50, while the total cash prizes for seed fairs was \$3,728. \$634 being paid out for prizes at the Provincial Seed Fair and the balance by various agricultural societies.

Judges for these competitions are chosen from among competent graduates of the Manitoba Agricultural College. Their salaries and travelling expenses are paid by the Provincial Department of Agriculture while transportation and lodging expenses are defrayed by the agricultural society holding the competition.

The judging is based upon a score-card prepared by the Field Husbandry Department of the

Manitoba Agricultural College. The total number of points possible is 1,000, perfect scores being allotted as follows:—

GOOD FARMING COMPETITION.

<i>General Appearance</i>	50 Points.
<i>Cultivation</i> (Including tillage in general, system of rotation, condition of summer-fallow, etc.)	200 Points.
<i>Farm Crops</i> (Condition, purity, variety).	350 Points
<i>Live Stock</i> (Breeding, variety, comparative numbers, feeding, care and management).	150 Points.
<i>Machinery</i> (Condition, care, management, suitability, provision repairs, harness and other for equipment).	100 Points.
<i>Farmstead</i> (House and surroundings, out-buildings, yards, gardens, water supply, wind breaks, hedges, etc.)	150 Points.

Under "General Appearance" is included the impression which the farm creates on approach and a general plan of the property. The methods employed in plowing, harrowing, soil packing, etc., are considered under the head of "Cultivation" as well as the system of crop rotation and summer fallow. Close attention is paid to the latter two phases, especially the presence or absence of a good system of rotation. In examining the condition of crop under the heading of "Farm Crops" special attention is given to vigour of growth, freedom from weeds, other kinds of grain which may have got mixed in and the extent to which the crops are true to their variety. Where special fields are grown for seed it is considered an advantage by the judges. Noxious weeds are looked for very closely and the seed selection from year to year is inquired into.

The necessity of a sufficient supply of livestock is another point that is not overlooked and an item well included in the score is the proper housing of machinery. The advisability of some provision being made for repair work is also emphasized

and the Good-Farming judges report a great many farms throughout the province which are now equipped with small forges and repair shops.

The farmstead is one feature of the score which might result in a certain amount of unfairness to some contestants were the score not subdivided very carefully. But in reaching a decision an effort is made to avoid handicapping the man of limited means; small, well adapted and sufficient house and barns are given practically as high a mark as the more expensive and pretentious places. A special point is made of the suitability of the buildings and the convenience of their situation in regard to water supply, drainage, location and sanitary improvements. The condition of the yard is taken into account, location and construction of wells and the judicious planting or arrangement of trees and hedges as protection for buildings, stock, etc. In short, stress is laid upon the homelike and practical conditions of the farm surroundings.

The better to record impressions accurately the cards are filled out on the spot as the inspection of the farm proceeds. Even good memory is not allowed to play any part in the scoring and the farmer has the satisfaction of knowing that his card is completed without any outside influence affecting the score to which his farm is entitled on its merits.

At the close of the competition, copies of the score-cards are sent to each competitor in order that he may know the weak points of his farm.

The department does not make any arrangements in regard to the disposition of the prize grain, that being left entirely to the competitor.

Several of the judges who may been engaged in making Good Farming Competitions awards for a number of years note a remarkable change in certain districts as a direct result. It is a significant fact that the prizes do not go to the same men every year.

SASKATCHEWAN.

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE.

THE number of Agricultural societies or other farmers' organizations that have conducted field crop competitions during each year since their inception:

1906	32	1909	49	1912	30
1907	36	1910	40	1913	36
1908	44	1911	32	1914	25

	1913	1914
Wheat	26	23
Oats	10	10
Barley	3	7
Flax	2	3
Fodder Corn	0	3
Grasses	0	1
Potatoes	0	3
Roots	0	0
Gardens	0	2
Grass Seed	0	0
Other crops	0	0
	41	52

The drouth which existed in many localities had the effect of lessening interest in the competitions last year.

The number of competitions in field crops conducted in 1913 and in 1914 was as follows:

The total amount of money contributed toward the organization and maintenance of Field Crop Competitions, apart from salaries and expenses of administrative officers is as follows:

	For Competitions held in 1912.	For Competitions held in 1913.
By the Federal Seed Branch	\$1,349 35	\$1,220 02
By the Provincial Government	3,299 34	2,875 50
By the Local Agricultural Organization conducting the competition	2,455 00	5,000 00

The total amount of money contributed toward the organization and

maintenance of Seed Fairs and Provincial Seed Exhibitions is as follows:

	Fairs held in Winter 1912-13.	Fairs held in Winter 1913-14.
By the Federal Seed Branch	\$2,539 82	\$1,959 83
By the Provincial Government	7,505 66	7,146 75
By local organizations	5,620 00	—

The amount provided by local organizations during 1913 does not include contributions of 15 Grain Growers' Organizations and Boards of Trade and similar associations which conducted seed fairs for which judges were supplied by the Extension Department. These details have not come to hand. Assuming that these offered the average of those organizations whose returns are to hand the amount above indicated would be increased by \$2000.

By way of assisting successful competitors in regard to the disposition of their grains, returns are compiled showing the names, addresses and shipping stations of the exhibitors, with the grains they offer for sale, and the price per bushel. These returns are put in circulation in channels where there is a demand for good seed.

For the training of judges short courses are held at the College of Agriculture, where those whose duty

it will be to place the awards on exhibits are given thorough drilling in grading and scoring of all grains, vegetables and dressed poultry, and the detection of seeds of noxious weeds. They also receive lectures on tillage and soil management, seed selection, and the conservation of moisture and fertility. The value and thoroughness of these instructions are attested by the fact that exhibitors who have shown seed at more than one competition have frequently expressed surprise at the uniformity of the scores given by different judges.

The rules governing competitions include shipping and marketing instructions and similar general information. For the purpose of impressing the value and purpose of the seed fair on exhibitors the following rules are added to the premium list:

RULES AND REGULATIONS.

"No premium shall be awarded for exhibits that contain noxious impurities or for those that for other reasons are considered unworthy. The judges may award prizes subject to the exhibits passing satisfactorily a germination test.

"Two quarts of each of the prize-winning exhibits will be kept for special tests and on the results of these tests the championships and special prizes will be awarded. These special tests will be made to determine the milling and baking value of the wheat, the milling value of the oats, and the brewing value of the barley.

"The decision of the judges will in all cases be final.

"Each exhibitor declares that he has in his possession or has sold from his crop of current year at least 50 bushels of wheat, oats, barley or potatoes, 25 bushels of flax, five bushels of peas and one bushel of grass seeds, as good as that which he exhibits. In case of sale the names of purchasers may be required.

"Small samples of each exhibit shall be taken by the secretary and held as evidence in the event of any dispute arising from a claim that the seed exhibited was not representative of that afterwards sold.

"Too great care cannot be exercised in the preparation of an exhibit. The presence of other kinds of grain, useless impurities, noxious weeds, damaged, smutty or diseased grain is sure to be discovered

by the judges and lessens one's chances of winning. The exhibits cannot be cleaned too well. But after selecting a good exhibit and cleaning it properly do not throw away your chances of winning by shipping it in a dirty or used sack which has held smutty grain or grain of another kind than that exhibited. Do not use a second hand flour sack or one that may be easily torn, and remember that the man who grows the best grain may be beaten by his neighbour who cleans his exhibit well and puts it up neatly.

"But exhibitors must also bear in mind their duties to prospective customers who may be induced to buy seed through having seen their exhibit or read of its standing in the seed fair. Be sure that the grain you have is equally as good as your exhibit."

RESULTS.

The good results following the holding of seed fairs and standing crop competitions cannot be overestimated. It is frequently observed and commented upon by the judges sent out by the Extension Department. In cases where the same judge has visited a point two years in succession the comment is interesting. It is noted that even in up to date farming districts there has been shown a lack of knowledge which has permitted the exhibitors to place their exhibits with noxious impurities in them. Records for 1912 show disqualification for nearly all exhibits owing to the presence of wild oats. The results of the 1913 seed fair in those localities have invariably shown a remarkable freedom from these and other impurities, following the good work of the judges in seeking to correct the evil.

The personal work of the judges in the standing crop competitions is having the effect of cleaning up the fields of competitors inasmuch as judges are desired to consider the condition of the entire farmstead in making awards. Furthermore the value of this work is becoming impressed upon the school authorities to such an extent that the judges are constantly being called upon to address the pupils on seed selection and conservation topics.

BRITISH COLUMBIA.

BY J. C. READEY, B.S.A., PROVINCIAL SOIL AND CROP INSTRUCTOR.

CROP Competitions were first held in British Columbia under the supervision of the B. C. Dairymens' Association. In 1912 the scope of these competitions was enlarged and the work undertaken with the assistance of the Dominion Seed Branch. Up to 1913 the work was carried on under the immediate charge of Mr. H. Rive, Provincial Dairy Instructor, but in that year on the appointment of a soil and crop instructor, field crop competition work was transferred from the dairy division to the soil and crop division.

In 1912 there were held 2 competitions in wheat, 3 in oats, 13 in potatoes, 1 in turnips and 1 in red clover 21 competitions in all.

In 1913 there were 3 in wheat, 9 in oats, 17 in potatoes, 1 in turnips and 2 in kale, —a total of 31.

There has been a steady increase in the number of Institutes competing, and in the number of entries, until, in 1914, 50 Farmers' Institutes participated, with a total list of 2 competitions in wheat, 1 in peas, 19 in oats, 5 in carrots, 5 in mangels, 3 in alfalfa, 4 in kale, 40 in potatoes and 1 in turnips, —a total of 80.

By the end of the present year the Seed Branch of the Federal Department of Agriculture will have contributed \$3,000 for the assistance in crop competition work. Apart from salaries and expenses of administrative officers, the Provincial Department contributed \$200 in 1912, \$860 in 1913, and \$3,800 in 1914, a total of \$4,860. In addition the province has paid in expenses outside of officers' salaries the sum of \$950 in 1912, \$457.60 in 1913, and \$1,536.20 in 1914. This latter sum includes the expenses of judging boys' and girls' competitions. Each year the Farmers'

Institutes competing have paid 50 cents per competition toward the prize list, being \$300.00, \$467.50 and \$1200 for the three years respectively.

In 1914 a provincial competition, made up from the harvested product of the prize-winning plots of the Field Competitions, was held at Victoria. A prize-list of \$192 was offered by the Provincial Department of Agriculture.

The first difficulty in promoting crop competition work, is the diffidence of the farmer toward the work. For this reason, while rules and regulations are regarded as essential, our belief has always been that results are greater than rules, and we have been lenient in their enforcement where no vital principal was involved, especially with the rancher who competes for the first time. This matter requires a good deal of tact and judgment on the part of the judge. The department feels that this course has been justified by the fact that an Institute that holds its first competition is almost always in the field again the following year. Another difficulty has been to impress the competitor with the spirit of the work, and last year we addressed them as follows: —

“The ulterior object of these competitions is to encourage a spirit of wholesome rivalry in crop-production. The real reason is that the thought and work involved in the competition will lead to improvement of methods, thereby securing better crops and more remunerative returns.

We find that a great many competitors do not choose their plot until the arrival of the judge. Then they select a particular part of the field that gives the best promise. The prize is won, not because of improved attention to the plot, but

because of naturally favourable conditions in the soil of the plot. The competitor gets no benefit from the competition except the prize-money that he may win, and the object of the competition is thus defeated.

"In order to overcome this difficulty, we are going to insist that a competitor register the location of the plot with the secretary when he makes entry. Forms will be provided for the purpose.

"Together with this, we are making it possible for an Institute to hold a competition with only five competitors, because we believe that five real competitors who will comply with the conditions are better than ten competitors where half of them do not know what they have done to win."

Much of the work of obtaining the names of competitors falls on the shoulders of the secretary of the institute, and to encourage these the department offers a prize of \$100 to the institute obtaining the largest number of bona fide competitors, and \$25 of this amount is payable to the secretary.

The department regards these competitions as being among the most valuable means of encouragement and education in the improved methods of tillage and of crop production. The slogan adopted, "We learn to do by doing," carries with it latent powers of cheap, effective education. When a man, woman or child in any walk of life is induced to "learn to do by doing," it would seem, in the light of present knowledge, that the highest efficiency had been obtained.

AGRICULTURAL CREDIT.

The United States Commission to investigate and study in European countries co-operative land-mortgage banks, co-operative rural credit unions, and similar organizations and institutions devoting their attention to the promotion of agriculture and the betterment of rural conditions, have issued Parts I and II of their Report. Part I deals with agricultural credit and Part II with land-mortgage or long-term credit. There is also contained in the pamphlet the text of a bill for suggested legislation. The following paragraph is taken from Part I of the Report: -

"In considering the conditions in Germany, as applying to the conditions in the United States, the essential points of difference between the two countries should always be borne in mind. In size the German Empire is about equal to the area of the State of Texas after cutting off from Texas an area as large as the State of Alabama. In population the German Empire contains about 68,000,000 people, or more than two-thirds of the population of the whole United States. In intensive farming the Germans are far ahead of our own farming population, and the average production in Germany has increased greatly,

while our average yield per acre has increased but slowly. In Germany the population in a given district is largely homogeneous, and the individual is, so to speak, attached to the soil, the same farms continuing in the same families for generations. In this country such a condition is seldom found. In Germany, on account of the limited supply of land and the large population, and on account of the known productivity of each piece of land, the value of that land is easily ascertained and varies within very slight limits. In this country the variations in value are very great. In Germany the average farm is about 20 acres; in this country the average farm is 138 acres. In Germany the credit and resources of the individual in a community are known to practically every other individual in that community; in this country no such accurate information is obtainable. In Germany the small farmer, his wife, and children all do manual work on the farm; in this country such a condition is rare. In Germany the people have been trained to a supervision and control of their operation by strict government regulations, which would not be favoured in this country."

MANITOBA.

HOME-GROWN ALFALFA SEED.

Manitoba now has home-grown alfalfa seed. The first threshing of alfalfa took place on the Government Demonstration Farm at Neepawa on October 31st. About six acres of the first crop of alfalfa was

been made possible by the Dominion Government grant provided under The Agricultural Instruction Act.

The machine used in threshing this alfalfa is the first clover machine that has ever started in Manitoba, if not



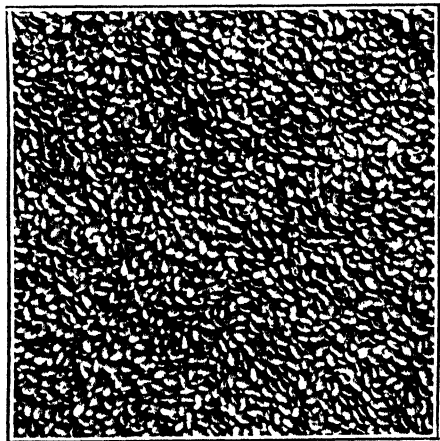
THRASHING GRIMM'S ALFALFA SEED, GROWN IN MANITOBA.

threshed and from this one field of less than six acres was obtained 25½ bushels (1,535 lb.) of clean pure seed, the quality of which is exceptionally high.

This alfalfa was grown on the farm of Mr. H. Irvine near Neepawa. The seed was the well known Grimm's variety and was sown in rows three feet apart and so thoroughly cultivated by machine and by hand that all weeds were exterminated. About three pounds of seed per acre was used and the field treated with soil from old alfalfa land. The soil of this field was a warm sandy loam. The harvesting was done by mower and the alfalfa cured in bunches and afterwards stacked for some weeks. Beyond an occasional unmatured seed the sample is apparently well matured.

The wisdom of the policy of agricultural education laid down by the Department of Agriculture at Ottawa is constantly being verified, this experiment in alfalfa having

the first to be used west of the Great Lakes. It gave perfect satisfaction and it is hoped that the farmers will go more into the growing of alfalfa and that many of these machines will be required in the near future



GRIMM'S ALFALFA SEED GROWN IN MANITOBA

This seed tested at Ottawa shows 97 per cent germination, all strong, and absolute freedom from noxious weeds.

SASKATCHEWAN.

LEGISLATION IN 1914.

THE recent session of the Saskatchewan Legislature was largely a war session and, as a consequence, very little legislation was passed affecting agriculture. The Dairymen's Act was amended to provide for adequate inspection and supervision of all business transacted by companies or individuals in any capacity whatsoever in the performance of their duties in handling the dairy produce of the farmers. The amendments provided for the securing of information upon which future legislation would be framed with a view to meeting the actual conditions so as to avoid inflicting injustice on persons engaged in the business of buying, testing, manufacturing or in any way doing public business in connection with dairying. Following were the appropriations for agriculture:

APPROPRIATIONS FOR AGRICULTURE FOR THE FISCAL YEAR COMMENCING APRIL 30TH, 1915.

Civil Government	\$ 39,155 00
Assistance to Agricultural interests, including Agricultural Societies, Provincial Fair, Grain Growers' Association, etc	73,600 00
Assistance to Live Stock Industry, including Commissioner and Assistant, grants to Live Stock and Poultry Associations and Winter Fair, Destruction of Wolves, etc	20,600 00
Dairy & Poultry Industries, Commissioner, Travelling Dairies, Advances for operation of Creameries and Poultry Industry	84,600 00
Publicity and Statistical Work	22,700 00
Bacteriological Laboratory	8,400 00
Weed Control and Game Protection	20,900 00
Bureau of Labour	8,900 00
Miscellaneous Services, Securing natural history specimens, etc., Domestic Science Scholarships; Exhibits for Exhibitions; Expenses under The Agricultural Instruction Act	17,100 00
Total	<hr/> \$295,955 00

DEPARTMENT OF EDUCATION.

Agricultural Extension Work	\$ 24,000 00
Grand Total	<hr/> \$319,955 00

ESTIMATE OF REVENUE FOR 1915.

Reimbursement of advances for operation of creameries	\$ 60,000 00
Assessment upon butter manufactured	10,000 00
Game and other fees	20,000 00
Casual revenue	500 00
Total	<hr/> \$ 90,500 00

CREAMERY WORK OF LAST SUMMER.

THE records of the work of the government operated co-operative creameries for the summer season of 1914 have now been made up, and again show a steady and substantial increase in business.

During the six months ending October 31st, a total of 1,161,000 pounds of creamery butter were marketed for the creameries by Dairy Commissioner, Mr. W. A. Wilson.

This represents the produce of 3,625 farmers as compared with 2,681 who patronized the creameries

during the same period last year, and this summer's make of butter was 313,000 pounds, or 35.7 per cent. in excess of that of 1913.

Thirty-two carloads of butter were shipped to outside points, and in addition the local trade was kept fully supplied.

The average make per creamery was 90,000 pounds, although two of the creameries were built this season and did not commence operations until the first week of July.

The number of patrons was 2,681 in 1913 and 3,025 in 1914.

ALFALFA COMPETITION RESULTS.

IN the April number of THE AGRICULTURAL GAZETTE, on page 298, there was described an "Alfalfa Growing Competition in the province of Saskatchewan." The fields entered had, by the spring of 1914, passed through at least two winters. In June the awards were made.

The factors given most attention by the judges were: yield and quality of crop, hardiness, freedom from weeds and grass and freedom from disease and insect damage.

For the purpose of this competition the province was divided into four districts. The prizes in each were six in number, and ranged from \$5 to \$75. In addition a silver trophy valued at \$250 was offered as a grand sweepstakes prize for the best field in the province which was won by Nicol Bros., Sintaluta.

The following are the conclusions that have been reached as a result of this competition:—

First—That alfalfa can be grown on all normal soils in all parts of the province.

Second—Only the hardier sorts will stand the low temperatures of western Canadian winters.

Third—Alfalfa will not produce a heavy yield in dry regions without rain

Fourth—The value of thorough preparation of the land was repeatedly demonstrated,

(a) For the conservation of soil moisture.

(b) For the eradication, before sowing, of perennial weeds such as quack grass, sweet grass and other native plants having a creeping rooted habit.

Fifth—That thin seeding is essential to success in the drier sections one to three pounds per acre is ample when sown in rows three feet apart for seed. In humid areas thicker seeding is more profitable.

Sixth—That where alfalfa has not been previously grown inoculation with alfalfa bacteria, either in soil from a healthy alfalfa field or in the form of artificial cultures should be used.

Seventh—That failures were due to one or more of the following causes: dry weather, tender varieties, unsuitable preparation of the land, the presence of creeping rooted perennials, or lack of inoculation.

ALBERTA.

AGRICULTURAL LEGISLATION.

AT the recent session of the Alberta Legislature no new measures were introduced affecting the work of the Department of Agriculture.

The Fence Ordinance was amended to make any fence declared by a by-law of any municipality a lawful fence and a second amendment was made requiring the placing of a fence surrounding a stack twenty feet away instead of ten feet.

The Noxious Weeds Ordinance was amended in Section 4, to make the owners of land responsible for the destruction of the weeds on the half of the road allowance contiguous to his land.

Two measures affecting agriculture were enacted to be administered by the Department of Municipal Affairs. These were entitled "The Wild Lands Taxation Act" and "The Timber Areas Tax Act."

THE WILD LANDS TAXATION ACT.

The aim of the Wild Lands Act is to derive some revenue from the use of uncultivated lands, merely held by the owners for purely speculative purposes.

Lands within the boundaries of any incorporated city, town or village, crown lands, Indian reserves, grazing land under lease, unpatented homestead land, land used for churches and cemeteries, and any land especially exempted by law or held for the public use of the province, are exempt.

Where the land owner is a bona fide farmer residing on some portion of his land he has 640 acres exempt from this tax without his being required to show cultivation or use for pasture.

Exemption is also granted in the case of owners who are making use of their land by cropping or cultivat-

ing at least one-quarter of the area they hold within a radius of nine miles or by pasturing their lands, as defined by the Act, for at least six months in the year. In this case, one horse or one cattle beast, or three sheep for each ten acres is the basis for calculation.

The tax is levied according to the value of the land without regard to any improvement and the rate is one per cent of the value.

The tax is to be collected by the Department of Municipal Affairs through assessors especially appointed for the same and the usual provisions are attached to this Act for enforcing the payment of taxes and penalty for default.

THE TIMBER AREAS TAX ACT.

Under the provisions of the Timber Areas Act all timber areas or timber berths are subject to a tax of two and a half cents per acre, payable to the general revenue of the province through the Department of Municipal Affairs.

It will be noted in connection with this Act that on or before the first day of March in every year every proprietor of a timber area shall without receiving any notice or demand, deliver to the Minister of Municipal Affairs a statement giving full particulars as to the timber area held, and also shall on or before the first day of June, pay over the tax of two and a half cents per acre on each acre so held.

The minimum tax provided for is \$25.00, and in case the return is not promptly made, the party holding the timber area will be subject to a penalty of one hundred per cent and in addition, shall on summary conviction before a Justice of the Peace be subjected to a penalty of \$20 per day for each day in default in delivering the return.

Provision is made for distress being levied on goods and chattels to recover these taxes, and such taxes are made the first lien on any timber cut from the timber area. Where the timber berth is held exclusively for the purpose of cutting wood or timber for settler's use the proprietor

may be relieved from paying the whole or any part of the taxes, and in case of a proprietor who is manufacturing lumber in the province from timber cut on his timber area, he may be allowed a rebate not exceeding one and a half cents per acre.

**APPROPRIATIONS FOR AGRICULTURE FOR THE FISCAL YEAR
COMMENCING DECEMBER 31st, 1914.**

Civil Government	... \$ 51,080.00	Grants to United Farmers & Irrigation Assns., Womens' Institutes, Destruction of Noxious Weeds, Natural History Society	28,600 00
Live Stock,		Bacteriological & Pathological Work	9,000 00
Live Stock & Agri'l Institutes & Assns., Fat stock Show ; Destruction of Wolves; Stock Inspection, Brands & Brand Book, Grants to Live Stock Assns., Spring Stock Show	49,600 00	Immigration & Colonization, *Advances under Elevator Act	20 000,00 200,000 00
Fairs & Exhibitions Official Judges,		Sundries & Contingencies	2,000 00
Production of Pure Seed Grain & Seed Fair, Fairs Association, etc	112,500 00	Total	\$ 791,580 00
Poultry,		*Chargeable to capital.	
To encourage Poultry Industry, Grant to Poultry Association	8,200 00		
Assistance to Dairying, *To assist Creameries, Advances to Creameries, To encourage Dairy Work.	167,000 00	ESTIMATED REVENUE FOR 1915.	
Demonstration Farms, Administration. *Purchase & Equipment, Operation	73,000 00	Agriculture Department (\$289,000 00)	
Operation of Schools of Agriculture, Agricultural Instruction	21,500 00	Fees: Game Licenses, Sale of Estray Animals and other Fees	\$ 64,500 00
Statistics, Protection of Game, Prairie Fires, etc	49,100 00	Reimbursement of Advances on Butte and Poultry Repayment, Account of Seed Grain.	150,000 00 7,000 00
		Demonstration Farms	60,000 00
		Repayment, Loans to Creameries	2,500 00
		Poultry Breeding Plant	3,000 00
		Registration of Threshing Machines	2,000 00
		Total	\$289,000 00

POTATO GROWING COMPETITION.

EXTENSION WORK, VERMILION SCHOOL OF AGRICULTURE.

BY PROF. E. A. HOWES, PRINCIPAL AND INSTRUCTOR IN FIELD HUSBANDRY.

I am in a position to make a final report of the comparative test of varieties of potatoes at Stony Plain and at Vermilion, under the auspices of the Department of Agriculture and the local agricultural

societies. At each centre the local Demonstration Farm, in co-operation with some five farmers, conducted the comparative test of six well known varieties of potatoes, the object being to ascertain the variety

most suitable this work being preparatory to the establishment of local potato growers' associations and intended to pave the way for uniformity of product, so that buyers should be in a position to know where a certain quality of potato could be purchased in commercial quantities.

Following I give a few notes on the varieties subjected to test. The varieties were uniformly white in colour because of market preference for such:—

Wee Macgregor—This variety much resembles Gold Coin being perhaps a little finer in general quality. This seed was secured from Brandon.

Vermont Gold Coin—The seed was secured from a farmer near Vermilion who has kept the stock pure; the seed coming originally from the Montreal district. This variety is for all practical purposes the same as Green Mountain and McKinley varieties, competent authorities state that the old name "Vermont Gold Coin" is the right one, and that the other names were added for obvious reasons.

Burbank—This is a potato well known west of the Rocky Mountains in the United States, being the only potato grown in a great many parts of that area. The seed was purchased in Minneapolis and the stock is pure as far as we have been able to secure evidence. The so-called "Ashcroft" potato grown in British Columbia is simply a Burbank strain.

Mayfield Blossom—This is a

Canary Island potato purchased from a farmer in the vicinity of Vermilion. Carman No. 1 was the potato originally selected, but we were disappointed at the eleventh hour in securing the desired quantity and Mayfield Blossom was substituted.

Sutton's Satisfaction This is a prize winner whose name explains its origin. This seed was purchased northwest of Edmonton.

Further comment on the varieties will follow the table of results.

AT STONY PLAIN.

At Stony Plain a potato fair was held on November 3rd. A special score card was prepared and a committee of buyers from Edmonton acted as judges in scoring the potatoes exhibited by local exhibitors.

After the scoring the large assemblage of farmers was addressed by the Minister of Agriculture, the Hon. Duncan Marshall, and by members of the Department of Agriculture; by the Minister of Education, the Hon. J. R. Boyle and by Dr. Tory, the president of the University of Alberta. At a banquet given by the Board of Trade further short addresses were given.

The cooking demonstration and test was made by Miss Carlyle of the Household Science staff of the Vermilion School of Agriculture.

Following is the average of the comparative scores and comparative yields of the six varieties of potatoes per acre:—

SCORES AND YIELDS.

Name.	Uniformity.	Size.	Shape	Depth of Eye.	Freedom from Disease.	Quality.	Cooking Analysis.	Total.	Yield per Acre, Bus.
Possible score	12	8	15	10	10	10	35	100	
Wee Macgregor	8	7 ¹ / ₂	10 ¹ / ₂	7	5 ¹ / ₂	7 ¹ / ₂	30	76	343
Gold Coin	8 ¹ / ₂	7	8 ¹ / ₄	6	4	7	29	70 ¹ / ₄	309
Burbank	8 ¹ / ₄	5 ¹ / ₄	8 ¹ / ₄	6 ¹ / ₂	5	6 ¹ / ₂	29 ¹ / ₄	70	333
Table Talk	8 ¹ / ₄	6	10 ¹ / ₄	7 ¹ / ₄	5 ¹ / ₂	7	27 ¹ / ₄	73	333
Mayfield Blossom	8 ³ / ₄	6	9 ¹ / ₄	7	3 ¹ / ₄	6 ³ / ₄	26 ¹ / ₂	67 ¹ / ₂	329
Sutton's Satisfaction	8 ³ / ₄	6	11 ¹ / ₄	8 ¹ / ₄	5	6 ³ / ₄	25 ³ / ₄	71 ¹ / ₄	201

AT VERMILION.

No scoring was done at Vermilion; the season being particularly unfavourable there, the farmers preferred the request that the test be extended for another year. However, the average of the comparative yields at Vermilion may be given:—

Wee Macgregor	302 bushels.
Gold Coin	224 "
Burbank	193 "
Table Talk	179 "
Mayfield Blossom	176 "
Sutton's Satisfaction	149 "

A study of the foregoing is interesting and instructive. It would appear that Wee Macgregor has a pretty fair lead on the rest of the field, being first in yield and first in cooking analysis. The heavy scoring in the division of "Freedom from Disease" may be explained by the presence of scab; some of the varieties being particularly bad in this direction. I would suggest formaline treatment for the potatoes suspected of infection. In point of quality Gold Coin and Burbank are very little behind Wee Macgregor. Gold Coin was a little rougher this year— the change of location being so much greater than in the case of the other potatoes planted. One fault the Burbank has, and that is, that extra growth seems to be all in one direction; after the potatoes grow to a certain size it seems to grow in length only, the shape of the larger sized potatoes being open to this objection. Table Talk and Mayfield Blossom are both handsome potatoes but this year showed too large a percentage of small and unsaleable potatoes; the general cooking quality, also, was not as good as in the case of the three first named. Sutton's Satisfaction was, by a considerable margin the best looking potato in the lot. Its colour has a tinge of yellow; its shape and surface were pretty nearly ideal. It will be noticed, however, that the yield was very small and that the

cooking quality was the poorest.

The interest shown in the test was most encouraging and goes to demonstrate that the kind of help most appreciated by the farmer is that which gives him, at least, a partial opportunity to help himself. As intimated at the beginning the work so far is of a preparatory nature. All of the varieties tested were good; any one of them could be handled successfully in a community enterprise, therefore, it is not so important that we convince everybody that the potato selected is the best as it is that every one in the community should co-operate to grow the potato selected. Every farmer, "side-walk" or genuine, has some pet variety of potato. It is imperative that the growers of potatoes should be willing to relinquish their pet variety for the sake of co-operative effort. It may be of encouragement in this line to read the report of the Rosthern Station where the statement is made, that for quality and yield combined, Wee Macgregor leads all others.

The next step is to secure organization of a number of farmers who will pledge themselves to grow one variety to the exclusion of all others. Following this, or rather in conjunction with it, the farmers must look to the improvement of their stock; by fighting potato scab and other diseases; by uniformity of product and by seed selection.

It is possible that it may be deemed advisable to conduct this test for another year but this is open to discussion and can be settled later. We have sufficient evidence of the outstanding quality of a certain variety. No doubt there are many other varieties which are desirable but the criticism is that there are already too many varieties, that the sooner we get down to one variety and seek to improve that variety, the sooner will we be in the line of definite progress.

PART III.

Special Contributions, Reports of Agricultural Organizations, Notes and Publications.

SOCIETIES AND ASSOCIATIONS.

THE QUEBEC POMOLOGICAL SOCIETY.

THE 22nd annual meeting of the Pomological and Fruit Growing Society of the province of Quebec was held at Macdonald College, December 2nd and 3rd, 1914. Among the papers read and the addresses given were the following: Distribution of Fruits, C. W. Baxter, Fruit Branch, Ottawa; Lessons from the 1914 Crop, Rev. Father Leopold, La Trappe; Transportation of Fruit, D. E. McIntosh, Forest, Ontario; Life of Trees of Different Varieties of Apples in the province of Quebec, Prof. W. T. Macoun, Dominion Horticulturist; Public Handling of Fruit, F. H. Grindley, Fruit Branch, Ottawa; Intercropping the Young Orchard, Prof. A. MacLennan, Macdonald College; Commercial Lime Sulphur and Arsenates of Lead, Mr. Newton, Montreal; Experiences with Fire Pots, M. B. Davis, Assistant to the Dominion Horticulturist; Preserving our Surplus Fruit, D. J. Wood of the Quebec Department of Agriculture. The closing address was delivered by Mr. D. Johnson, Dominion Fruit Commissioner.

In all these addresses the most salient point emphasized was the great need for more co-operative effort. Much evidence was available

to show that the province of Quebec could produce large quantities of very valuable fruit, more especially of the Fameuse and McIntosh varieties of apples, and that to successfully market the possible crops, co-operation was very necessary. In the concluding address of the convention, Mr. Johnson traced briefly the history of co-operation in Ontario and offered many suggestions for the organization of co-operative societies. Further efforts were also made to initiate co-operative work with other societies, so as to secure the holding of a combined exhibition in Montreal, and also annual meetings where each society could conduct its own work and hold joint meetings where general methods could be discussed. This was presented in a motion by Dr. Harrison, principal of Macdonald College, and Rev. H. A. Dickson of Rectory Hill, Quebec, "That the Executive be instructed to ascertain the possibility of bringing about co-operation with the horticultural, florists', and vegetable growers' societies of the province, with the object of holding a provincial flower, fruit, vegetable and honey show in the city of Montreal, similar to that held in Toronto." This proposition was strongly approved by the Con-

vention and the Executive instructed to take the necessary steps, and to prepare a report for the summer meeting.

RESOLUTIONS.

Among the resolutions passed were the following:

WHEREAS the work in connection with better transportation facilities for fruit, carried on by the Ontario Fruit Growers' Association, generously assisted by the Ontario Government, has been Dominion-wide in its effect, therefore, be it resolved that the Pomological and Fruit Growing Society of Quebec desires to bring to the attention of the Honourable Minister of Agriculture and Mr. D. Johnson, Fruit Commissioner, the necessity of federal aid in furthering that work.

WHEREAS this Society approved of the terms of Bill 85 (respecting the transportation of fruit and other produce) introduced in the last session of the Dominion Government by Mr. J. E. Armstrong, therefore, be it resolved that we urge the support of same by the several members of parliament from Quebec constituencies.

WHEREAS the Minister of Agriculture for the province of Quebec has, by all means, encouraged the

work of this Society, and that of the Demonstration Orchards and Fruit Stations in the province, by furnishing fruit graders, spraying pumps, etc., therefore, be it resolved that we tender him our thanks for his continued efforts in our behalf.

Resolutions of regret were also passed on the death of the late Alexander McNeill and the late Dr. William Saunders.

A prominent feature of the Convention was an exhibit made by the Division of Horticulture of the Central Experimental Farm, which included a large number of seedling apples originated and propagated by W. T. Macoun, and an exhibit of corn showing progress being made in the efforts to secure an early, hardy variety of sweet corn.

The officers elected for the ensuing year were: President, R. A. Rousseau Actonvale; vice-president Prof. Lochhead, Macdonald College; secretary-treasurer, Peter Reid, Chateauguay Basin; directors, G. B. Edwards of Covey Hill, C. E. Slack, Abbotsford, J. P. Hitchcock, Massiwiippi, Rev. H. A. Dickson, Rectory Hill, T. A. Raymond, St. Vallier, A. Roy, L'Ange Gardien, F. T. Gosselin, St. Famille, Rev. Father Leopold, La Trappe and R. Brodie, Montreal.

QUEBEC BEE KEEPERS' ASSOCIATION.

THE annual meeting of the Quebec Bee Keepers' Association (*Société des apiculteurs de la province de Québec*) took place at the Monument National, the 11th and 12th November, 1914. Over two hundred members were present at the meeting which was presided over by Dr. Emery Lalonde.

Among those present were: the Honorable J. E. Caron, Minister of Agriculture; Mr. Gustave Boyer, M.P. for Vaudreil and Mr. C. P. Dadant, editor of the American Bee Journal, Hamilton, Ill.

A resolution was passed asking the Government to legislate against the use of box-hives and the Minister was asked to

increase the grant to the Society up to the sum of \$300.

Mr. F. W. L. Sladen, Apiculturist, Experimental Farms, Ottawa, gave an address on "Queen Rearing;" Mr. C. P. Dadant, editor of the American Bee Journal, on a "Trip through Europe;" dealing particularly with the various methods en vogue in the various European countries visited, namely France, Switzerland and Italy.

Addresses were also given by Mr. A. L. Beaudin on "The Production of Extracted Honey" and Mr. Uldéric Paradis on "Artificial Swarming."

The meeting decided to ask the Quebec

Government to have a French translation made of the work entitled "A year's work in an apiary," written by G. M. Doolittle and published by the A. I. Root Company.

The Honourable J. E. Caron, Minister of

Agriculture, spoke about the production of honey in the province and expressed great satisfaction at the work done by the association during the five years that it has been in existence.

LIVE STOCK ANNUAL MEETINGS.

THE annual meetings of the various live stock and record associations, with headquarters in Ontario, will be held at the Carls-Rite Hotel,

Toronto, during the week beginning February 1st, 1915. The following are the various associations meeting and the names and addresses of the secretaries:

SOCIETIES.

Ontario Horse Breeders' Association

Canadian Clydesdale Breeders' Association

Canadian Shire Horse Association

Canadian Hackney Horse Society

Canadian Thoroughbred Horse Society

Canadian Pony Society

Dominion Cattle Breeders' Association

Dominion Shorthorn Breeders' Association

Canadian Hereford Breeders' Association

Canadian Jersey Cattle Club

Dominion Sheep Breeders' Association

Ontario Sheep Breeders' Association

Dominion Swine Breeders' Association

Ontario Berkshire Association

Ontario Yorkshire Association

National Record Board

SECRETARIES.

R. W. Wade, Dept. of Agriculture,
Toronto, Ont.

J. W. Wheaton, 12 Wellington St.
E., Toronto, Ont.

G. de W. Green, Toronto, Ont.

H. M. Robinson, 147 Don Mills
Rd., Toronto, Ont.

J. J. Dixon, Toronto, Ont.

G. De W. Green, Toronto, Ont.

A. P. Westervelt, Toronto, Ont.

H. M. Pettit, Burlington, Ont.

John W. Brant, Ottawa, Ont.

R. A. Bull, Brampton, Ont.

A. P. Westervelt.

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John W. Brant.

The annual meetings of the Alberta Sheep and the Alberta Swine Breeders' Associations were held in Calgary on December 9th. Mr. W. F. Stevens, Live Stock Commissioner for the province of Alberta, was unanimously elected president of the Provincial Fat Stock Show.

At the Sheep Breeders' meeting a resolution was passed asking the Dominion Minister of Customs to remove the duty on woven wire fencing coming into Canada. It was urged at the meeting that the chief obstacle in the way of the development of the sheep industry was the difficulty in securing at a reasonable price woven wire fencing which was a necessity in the keeping of sheep.

The following resolution was passed with regard to the wool sales:

"That the appreciation of the Alberta Sheep Breeders' Association be expressed to the Dominion Live Stock Commissioner for the co-operation and assistance given

by the Sheep Division in the way of grading and assistance in the sale of wool, and that it is the opinion that the Alberta Sheep Breeders' Association can be of greater assistance in the future in this capacity than during the past year in the event of it being possible to advise breeders and sheep men early in the year of the intention of the Association to assist in marketing wool, and that we urgently request the Dominion Live Stock Commissioner to extend the same assistance the coming year in the way of supplying an expert to grade the wool."

It was also resolved to urge upon the Minister of Agriculture for Canada and the Minister of Agriculture for Alberta the adoption of some system of identification of imported frozen mutton which would make it easy for consumers to know whether they were purchasing home grown or imported mutton.

The Swine Breeders' Association passed a resolution asking the railroads and packing houses using separate yards for the

assembling of hogs, to provide a suitable chute for unloading hogs from wagons. The association was of the opinion that a considerable portion of the bruising was the result of hogs being compelled to back off the wagons and drop to the ground without a proper unloading chute.

The following officers were elected for the year 1915:

ALBERTA SHEEP BREEDERS' ASSOCIATION.

President: R. Knights, Calgary.

1st Vice-Pres.: P. M. Bredt, Calgary.

2nd Vice-Pres.: A. P. Jaques, Castor.

Secretary: E. L. Richardson.

Directors: Hugh Hill, Lloydminster; Fred Downie, Carstairs; E. H. Howell, Craighdu; H. W. Watkin, Olds; E. Parlbly, Alix; J. W. Renton, Calgary; Thos. Stuart, Priddis; Angus McIntosh, De Winton; H. A. Malcolm, Innisfail; E. E. Swift, Viking.

ALBERTA SWINE BREEDERS' ASSOCIATION.

President: Lew Hutchinson, Duhamel.

1st Vice-Pres.: Oscar Millar, Strathmore.

2nd Vice-Pres.: H. S. Currie, Castor.

Secretary-Treasurer: E. L. Richardson.

Directors:—W. J. Hoover, Bittern Lake; John Maurer, Clive; E. E. Swift, Viking; Rowland Ness, De Winton; G. H. Hutton, Lacombe; W. E. Tees, Lacombe; J. L. Walters, Clive; E. J. C. Boake, Acme; H. A. Malcolm, Innisfail; T. E. Bowman, Aldersyde.

The annual convention of The Western Live Stock Union was held recently in Winnipeg. This organization embraces all the territory between the Pacific coast and the Great Lakes, and its object is to do everything in its power to conserve the interests of live stock men within the limits of its jurisdiction and to encourage them in carrying on their affairs with enterprise and in accordance with modern methods.

The annual meeting of the Holstein Friesian Association of Canada will be held in the Canadian Forrester's Hall, Toronto, on February 4th, at 9.30 o'clock. The Secretary is W. A. Clemons, St. George, Ont.

The annual meeting of the Canadian Ayrshire Breeders' Association will be held at Montreal, February 10th, 1915. The secretary is W. F. Stephen, Huntingdon, Que.

The Annual Convention and Winter Dairy Exhibition of the Dairymen's Association of Western Ontario will be held at St. Thomas on January 13th and 14th, 1915. The Secretary is Frank Hems, London.

At a meeting of the directors of the Alberta Horse Breeders' Association, held in Calgary on November 27th, it was decided to hold the next annual Horse Show at Calgary on April 21st, 22nd and 23rd. Owing to the war it was decided to confine the show to breeding classes only.

The annual meeting of the General Stock Breeders' Association of the province of Quebec will be held at the Queen's Hotel, Montreal, on February 9th, commencing at 10 o'clock. On the evening of the same day and the following day the annual meeting of the French Canadian Horse, Canadian Cattle, Quebec and Quebec Swine Breeders' Association will be held. The Secretary of these associations is Dr. J. A. Couture, Quebec, Que.

It was announced at the convention that the railways have made concessions to the provinces of Saskatchewan and Alberta, agreeing to make a reduction of 50 per cent in the freight rates on feed shipped from one district to another and consigned to farmers for feeding purposes.

Officers for the ensuing year were elected as follows: Hon. Martin Burrell, Minister of Agriculture, honorary president; Dr. J. G. Rutherford, Calgary, president; vice-president for Manitoba, Mr. Andrew Graham; for Saskatchewan, Hon. C. Sutherland; for Alberta, Mr. J. L. Walters; for British Columbia, Dr. S. F. Tolmie; secretary-treasurer, Mr. P. E. L. Richardson, Calgary; hon. director, Mr. John Bright, Dominion Live Stock Commissioner.

The annual meeting of the Maritime Poultry Association was held at Amherst on December 9th, 1914. On resolution it was decided that, in future, exhibits for the annual Poultry Show, which is a part of the Maritime Winter Fair, be in the show

President	Seth Jones, Sussex.
Vice-President for Nova Scotia	W. H. Henry, Shubenacadie.
Vice-President for New Brunswick	J. B. Jackson, Moncton.
Vice-President for P.E.I.	L. H. D. Foster, Marshfield.
Director for Nova Scotia	C. J. Cock, New Annan.
Director for New Brunswick	George Seaman, Moncton.
Director for P.E.I.	Albert Boswall, French Fort.
Prize list Committee	Messrs. Foster, Jones, Landry.
Secretary and Treasurer	J. P. Landry, Truro.

building not later than Saturday night preceding the Show. It was also decided to change the closing of the association year from December 31st to October 1st.

The following officers were elected:—

The annual business Meeting of the Canadian Forestry Association will be held in the Carnegie Public Library, Ottawa, on January 19th. The secretary is James Lawler, Ottawa.

The annual meeting of the British Columbia Entomological Society will be held at Vancouver on January 16th, 1915. The Secretary is R. C. Treherne, Experimental Farm, Agassiz, B.C.

The annual Exhibition of the Westmorland Poultry and Pet Stock Association will be held at Moncton on January 19th, 20th, 21st and 22nd, 1915. The Secretary is George H. Seaman, Moncton.

The tenth annual winter show, under the auspices of the Napanee Poultry Association, will be held at Napanee on January 13th, 14th, and 15th, 1915. The secretary is George B. Curran, Napanee, Ontario.

The third annual meeting of the Pure Maple Sugar and Syrup Co-operative Agricultural Association will be held in Beauceville, Que., at the Town Hall on Tuesday, January 12th. The secretary-treasurer is Mr. Joseph H. Lefebvre, Waterloo, Que.

The annual convention of the Saskatchewan Dairywomen's Association will be held at the School of Agriculture, Saskatoon on January 13th to 14th. The secretary is W. A. Wilson, Dairy Commissioner, Regina.

The annual meeting of the Co-operative Fruit Company of Prince Edward Island was held in Charlottetown on December 1st. The financial statement showed a balance of \$20 to the good on the year's transaction. A resolution was passed appreciating the assistance rendered the association by the Rev. Jean Chaison, of Rustico. The following officers were elected:—A. E. Dewar, president; Capt. H. McPhee; vice-president; S. A. Coffin, Savage Harbour; Rev. J. J. McDonald, Kinkora, directors; and Theodore Ross, secretary.

The third annual convention of the Canadian Produce Association will be held at the Ontario Agricultural College, Guelph, on January 11th and 12th, 1915.

The Department of Agricultural Extension of the Saskatchewan College of Agriculture announces that the Provincial Seed Fair and Agricultural Societies' Convention will be held on January 12th, 13th, 14th and 15th. The short course in agriculture, to be held at the College, will come the week after, including the six days, January 18th, 19th, 20th, 21st, 22nd and 23rd.

The annual meeting of the Quebec Bee Keepers' Association was recently held in Montreal. The officers elected for the ensuing year were: Honorary-President, Honourable J. A. Caron, Minister of Agriculture, Quebec; acting president, Dr. E. Lalonde; vice-president, A. L. Beaudin; secretary-treasurer, Oscar Comire.

The British Columbia Department of Agriculture has decided, as a consequence of the present financial depression engendered by the war, and the consequent necessity for the Provincial Government to eliminate all the expenditures other than those that are absolutely necessary, to cancel the Annual Convention of the Agricultural Associations and the Central Convention of the Farmers' Institutes.

The annual meeting of the Western Fair Managers' Association was held at Winnipeg on October 28th, when the following officers were elected: President, D. T. Elderkin, Regina, Sask.; vice-president, D. E. Mackenzie, New Westminster, B.C.; secretary, W. J. Stark, Edmonton, Alta.; directors, W. I. Smale, Brandon, Man.; E. L. Richardson, Calgary, Alta.; C. D. Fisher, Saskatoon, Sask.; and Geo. W. Greig, Winnipeg, Man.

A special committee was appointed to arrange for joint meetings with General Passenger Agents and with General Freight Agents of the three transcontinental railways with a view to securing favourable passenger and freight rates to exhibitions.

The seventh annual convention of the United Farmers of Alberta will be held at Edmonton on January 19th, 20th and 21st, 1915. The secretary is P. P. Woodbridge, Calgary, Alberta.

The Eastern Ontario Winter Fair will be held at Ottawa on January 19th, 20th, 21st and 22nd, 1915. The Secretary is W. D. Jackson, Ottawa.

The annual meeting of the Prince Edward Island Poultry Association will be held on March 4th, 1915, at Charlottetown. The secretary is George Lightizer, Charlottetown.

The annual meeting of the Alberta Poultry Association will be held at Edmonton on January 6th, 1915. The secretary is W. McC. Moore, Edmonton.

The annual meeting and Winter Fruit Show of the Fruit Growers' Association of Prince Edward Island, was held in Charlottetown on December 1st and 2nd. The attendance was large and the exhibition of fruit was better than usual. A competition in box packing of apples was held for the students of the long course in agriculture. Mr. G. H. Vroom, Dominion Fruit Inspector, placed the awards.

The annual meeting of the Nova Scotia Fruit Growers' Association will be held at Middleton on January 20th, 21st and 22nd, 1915. The secretary is Manning Ells, Port William, N.S.

A resolution of condolence was placed on the minutes regarding the death of J. A. Annear, of Lower Montague, one of the largest fruit growers in the province. The following officers were elected: President, A. E. Dewar, Charlottetown; secretary, Theodore Ross, Charlottetown; vice-president, Capt. Hugh McPherson, Georgetown; directors, for King's county, Fred McIntyre, Montague; S. A. Coffin, Savage Harbour; D. J. Stewart, Aitken's Ferry; for Queen's county, J. Johnson, Long River; S. R. Lane, Southport; A. K. Henry, Granville; for Prince county, A. J. McFadyen, Tignish; C. R. Dickie, St. Nicholas, and Albert Schurman, Central Bedeque.

The Western Ontario Seed Growers' Association was organized at the annual convention of the members of the Seed Growers' Association resident in Ontario, held at the Guelph Winter Fair. The officers of this association are, G. H. Clark, Seed Commissioner, Ottawa; Prof. C. A. Zavitz, O.A.C., Guelph; A. MacKinney; Fred Foynston, and R. W. Wade, secretary-treasurer, Guelph Winter Fair. The association has been formed to aid in the production and dissemination of high class seeds with members, bona fide seed producers, who will put out seed guaranteed as to quality.

AN AGRICULTURAL CONFERENCE.

THE officials of the Department of Agriculture of New Brunswick met in conference at Fredericton on November 25th, 1914. The conference was called by Honourable J. A. Murray, Minister of Agriculture. This was the second conference of officials, the first having been held in July, 1914. At these conferences all matters relating to the work of the department are freely discussed. It has been decided to continue these periodical meetings, as much good has been derived, and a lively interest manifested in the work on the part of the officials. At the conference held in November the following subjects were discussed: the short courses in agricultural education which will be given throughout the provinces during the winter months. In connection with the Live Stock Department, Messrs. Ford and MacDougall were appointed a committee to look into the

question of further assistance to this department, and asked to report in detail to the Department of Agriculture in December. Tuberculosis in cattle was also freely discussed and steps will be taken to place the gravity of this disease before the agriculturists of the province. A committee was also appointed, consisting of a number of the officials, to confer with a prominent live stock breeder and seedman, after which they will draw up a uniform prize list for the Department of Agriculture. The department will adopt this prize list and issue it to all exhibition societies asking for financial aid from the Government. Other subjects discussed were: enlargement of markets; the cost of productive methods; cost of feeding live stock, potato diseases, insect diseases and extermination of the Brown Tail Moth.

The officials present were: A. G. Turney, Acting Secretary of Agriculture; R. New-

ton, Director of Agricultural Schools; W. D. Ford, Superintendent of Animal Husbandry; B. T. Reed, Superintendent of Field Husbandry; C. W. McDougall, Dairy Superintendent; L. C. Daigle, Dairy Superintendent; H. B. Durost, Fertilizer

and Drainage Superintendent; N. W. Everleigh, Assistant Dairy Superintendent; William McIntosh, Acting Provincial Entomologist; William Kerr, Potato Inspector, and Seth Jones, Poultry Superintendent.

LANTERN SLIDES OF BIRDS.

WITH a view to stimulating an interest in the protection of birds the Department of Agriculture of Saskatchewan has secured a number of sets of lantern slides showing, in natural colours, many of the birds of Saskatchewan. These are made available to teachers and others interested in the study of birds. In reply to a letter in regard to this Mr. F. Bradshaw, Chief Game Warden of Saskatchewan, writes as follows:—

"The lantern slides were purchased from the National Association of Audubon Societies, 1974 Broadway, New York. They are admirably coloured and are made from drawings by the best known artists on the American continent. They cost eighty cents per slide, and the association, I believe, loans slides for a nominal sum per month to responsible parties who are not prepared to buy them outright. There are now more than one hundred and fifty different slides for sale, and new ones are being constantly prepared.

In compliance with your request, we append a list of thirty-five slides selected by this department. This number we consider ample to furnish subject matter for a good hour's talk, and they are fairly representative of the different families of our most common birds. Slide No. 33 the Passenger Pigeon is included to illustrate man's power in exterminating species of wild life, and it is intended as a lesson to our citizens of the necessity of protecting the wild life which we are still fortunate enough to possess. Nos. 34 and 35 are intended to enlighten the people of the horrors of the plume trade, and to gain their sympathy and support in doing away with this cruel business. With the exception of these three slides the rest illustrate some of our most common birds.

Realizing the fact that many would perhaps like to have the free use of the slides who do not feel confident to talk on the

subject from their own personal knowledge, the department has prepared a typewritten syllabus that will enable any person, by a little study of its contents, to present the subject before an audience in an intelligent manner. If good use is made of these slides the department will likely add other series of slides dealing with other species of our birds and other natural history subjects."

Following is a list of the slides used in Saskatchewan:—

1. Herring Gull.
2. Franklin's Gull.
3. Common Tern -- Adult and Young.
4. Wood Duck.
5. Mallard.
6. Canvasbacks -- Male and Female.
7. Spotted Sandpiper.
8. Upland Plover.
9. Killdeer.
10. Mourning Dove.
11. Ruffed Grouse.
12. Sharp-skinned Hawk.
13. Nighthawk.
14. Belted Kingfisher.
15. Blue Jay.
16. Red-winged Blackbird.
17. Yellow Headed Blackbird.
18. Baltimore Oriole.
19. Bobolink.
20. Meadowlark.
21. Horned Lark.
22. Flicker.
23. Hairy and Downy Woodpeckers.
24. Snow Bunting.
25. Goldfinch.
26. Purple Finch.
27. American Crossbill and White-winged Crossbill.
28. Rose-breasted Grosbeak.
29. Cedar Waxwing.
30. Chickadee.
31. Robin.
32. Bluebird.
33. Passenger Pigeon.
34. Snowy Egret.
35. Egret.

DENMARK.

DENMARK is one of the smallest kingdoms in Europe. The total land area measures less than 15,000 square miles, making it less than one-half the size of Maine, and less than one-fourth the size of Missouri. The soil is naturally light, and great sections of central and western Jutland are sandy and almost worthless. The climate while never extremely cold, is raw and inhospitable the greater part of the year. The population numbers about 2,800,000, of whom fully 61 per cent make their living from the soil.

In this much-handicapped land a mighty struggle has been waged against nature. In less than two generations a poorly ordered agricultural system has been changed into the most scientific to be found anywhere on the continent of Europe. The soil has been made to yield abundantly, and its products have been

placed upon the world markets by the farmers themselves, who receive special training for this very purpose. Nothing speaks in stronger terms for the success of Danish agriculture than figures showing the surprisingly rapid increase in the amount of annual exports. Thus, in 1881, just before co-operative enterprise among the farmers had gained much headway, the net export in the three farm staples, bacon, butter and eggs, was valued at \$12,010,000. In 1904, it had increased to \$68,070,000, and only eight years later had reached the surprisingly large sum of \$125,000,000. Such figures can be explained in one way only—the application of broad general intelligence to agricultural production and marketing, an intelligence induced by a system of schools peculiarly adapted to rural needs.—*H. W. Foght, Bulletin No. 22, Bureau of Education, Washington, D.C., The Danish Folk High Schools.*

AGRICULTURAL SCHOOLS IN DENMARK.

TO meet the increasing demand for technical instruction in agriculture in Denmark there have grown up a number of agricultural schools.

These are an outgrowth of the Folk High Schools and are closely affiliated with them. They are organized on the same plan as the high schools, having usually the same length of term and the same kind of organization, and following the same methods of instruction. These schools, located in different parts of the country, closely resemble each other. The following is the course of instruction offered in the agricultural school near Ladelund during the winter of 1913:

	Hours
Chemistry—as foundation for understanding of fertilizers, feeders, etc.	75
Physics—as applied to machinery, heat, electricity, etc.	45
Drawing and land measuring.	30

Study of soils	15
Arithmetic	50
Danish	60
Gymnastics, one hour each day.	
General Agriculture:	
(a) Plant culture	55
(b) Soils and their treatment, fertilizers, rotation, plant diseases	120
Domestic animals:	
(a) Anatomy of domestic animals, feeding and breeding of cows and swine	140
(b) Horse breeding	25
(c) Diseases of domestic animals	25
Dairying	15
History of agriculture	15
National economy	15
Farm machinery and implements	15
Electro technique and power machines	15
Farm accounting	50
—L. L. Friend, in The School Board and School Review, Toronto.	

NORWAY

THE Government assists agriculture by an annual grant of \$400,000 and by the maintenance of an agricultural college and three state experiment stations. It has also established a bank where those wishing to buy small areas of land for homes can borrow money at 3½ per cent interest for long terms, to be paid in installments; 14,000

have availed themselves of the provisions of this act to the amount of \$400,000. The Royal Society for the Welfare of Norway is the central agricultural society; the Farmer's League, a semipolitical society, has gathered the farmers together; the country societies have in their service many agricultural, horticultural, and forest experts whose only task is to instruct farmers

and superintend exhibitions, experiments, and all kinds of public undertakings to promote agriculture. Almost every community, especially in the eastern part of the country, has societies for purchasing fertilizers, feeding stuffs, and machinery, which they get through large associations, for common purchase, one in each principal part of the country. Agricultural experiments are undertaken by the agricultural

college and at three state experiment stations; besides this the agricultural schools and the country societies make many trials with a view to helping farmers to find out the best seeds, the best way of fertilizing, of feeding cattle, the use of machinery, etc.; horticultural and dairy experiments are also carried on. *Extract from Daily Consular and Trade Report, Washington, November 14th, 1914.*

THREE-DAY DAIRY TESTS.

Milking tests of three days' duration were held at the Ontario Winter Fair and at the Maritime Winter Fair held at Guelph, Ont., and Amherst, N.S., respectively, early in December. At Guelph, where sixty cows competed, the Holstein cow, Rosie Posch, owned by W. H. Cherry, Hagersville, won the championship award. The following records were made by the first prize animal for each breed:



MISS LAHONDA.
Champion cow in the Maritime Winter Fair 72 hours dairy test and owned by S. Dickie & Sons, Lower Onslow, N.S.

BREED.	NAME.	OWNER.	Lb. Milk.	Per Cent Fat.	Lb. Fat.	Total Points.
Holstein	Rosie Posch	W. H. Cherry, Hagersville	253 6	3 6	9 10	297 48
Ayrshire	Scottie's Victoria	John McKee, Norwich	171 8	4 5	7 31	240 30
Jersey	Springbrook Butter Girl	D. A. Boyle, Woodstock	130 7	4 9	6 4	198 2
Shorthorn	Gipsy	A. S. Stevenson, Atwood	143 7	3 9	5 604	179 64
Grade	Beauty.	G. B. Ryan, Tillsonburg	227 3	3 8	8 637	277 05

At Amherst ninety-nine cows competed. A new record, not only for the Maritime Winter Fair, but for all other similar contests held in Canada, was established. The winner was a Holstein cow, Miss

LaHonda, owned by S. Dickie & Sons, Lower Onslow, N.S. The following records were made by the first prize animal for each breed:

BREED.	NAME.	OWNER.	Lb. Milk.	Lb. Fat.	Lb. S.N.F.	Total Points.
Holstein	Miss LaHonda	S. Dickie & Sons, Lower Onslow	273	10.51	22.34	332 57
Guernsey	Ruby	D. G. McKay & Son, Scotsburn, N.S.	143 7	7.03	12.80	214 15
Jersey	Maud	J. E. Baker & Son, Barronsfield.	107 6	5.86	9 64	174.42
Ayrshire	Mona D.	McIntyre Bros., Sussex, N.B.	163 8	6 5	13.42	205 86
Shorthorn	Lilly.	Alfred Johnson	94.3	3 46	7.9	111.90
Grade	Jewel.	T. W. Keilor, Amherst Point	266 5	6 74	19.89	

THE BLUE CROSS.

During the Balkan war an organization was formed to perform for wounded horses what the Red Cross Society does for men engaged in fighting. The movement, which is known as the Blue Cross Fund, is now recognized by the military authorities, the committee in charge having been authorized by the government of the French Republic to establish eight base hospitals for wounded horses within reach of the fighting lines.

The Fund is receiving generous support in Great Britain, the headquarters being at 58 Victoria St., Westminster, London. The organization there has for president, Lady Smith-Dorrien; chairman, Chas. W. W. Forward; treasurer, Roy Horniman; secretary, Arthur J. Coke, while the committee includes many notable people, among whom may be mentioned Her Grace the Duchess of Newcastle, The Viscountess Parker, and the Dowager Viscountess Wolsley.

The movement has reached Canada and has already accomplished much. In the middle of November a propaganda was started in the City of Toronto by the holding of a luncheon, and since then regular meetings have been held. The following letter from the convener of the Blue Cross

Committee in Toronto shows what had been accomplished up to the 11th of December.

To the Editor, THE AGRICULTURAL GAZETTE:

"I am glad to say that our efforts thus far have been successful. I am sending next week to the Blue Cross Society headquarters in London a draft for £100. As well as that I am sending six thousand bandages and a hundred knitted wither pads, both pads and bandages are made according to directions from the Blue Cross. The Societies in France and England are doing splendid work. There are several hospitals throughout France with fully qualified veterinary surgeons in charge, and they collect the slightly wounded or worn out horses and try to save them by careful nursing. They also employ trained men to go over the battlefields after a battle and shoot the poor beasts that are beyond saving. I am sure all animal lovers will take an interest in this merciful work and do all they can to help.

Mrs. MARGARET M. MCCARTHY,
Convener Blue Cross Committee.
3 Elm Ave., Toronto.

REVIEWS.

The Principles of Irrigation Practice, by John A. Widstoe, M.A., Ph.D.; The Macmillan Company, Toronto and New York; 5 x 7½ inches; 496 pages, illustrated.

The author, who is president of the Utah Agricultural College, in his prefatory note says: "Irrigation and dry-farming are rapidly conquering drought." His aim in writing this work was to furnish the students and intelligent farmers with a modern view of the principles of irrigation practice. The volume is divided into twenty-two chapters which are grouped under five general heads, viz.: Introduction; The relation of water to soils; The relation of water to plants; Crops under irrigation, and Miscellaneous. While an examination would leave the impression that little was left unsaid, the author has seen fit to place at the end of each chapter a list of references for the use of those who desire to carry their studies further. An appendix also gives a brief list of books on irrigation. Besides a photogravure of Brigham Young, who is credited with being the founder of irrigation in America,

the volume contains thirty-three illustrations. The book belongs to the rural text book series edited by Professor L. H. Bailey.

Elementary Exercises in Agriculture, by S. H. Dadisman, B.S. Agr., The Macmillan Company, Toronto and New York; 4¾ by 7½ inches, 106 pages, illustrated.

The author—the Principal of the Rollo Consolidated School, Rollo, Illinois—in undertaking the preparation of this work realized the need of a simple text book for the daily use of the rural teacher. The book aims to tell of the things that the child should know in order to become interested in farm life. It is divided into chapters and the chapters into exercises, in many of which are shown graphic illustrations. Following are the chapter headings of the book:—Soils, Plants, Cultivated Plants, Weeds, Horticulture, Domestic Animals, Poultry, Insects, Bacteria, The Toad, The Rabbit, Birds, Excursions and Study and Discussions.

Farm Structures, by K. J. T. Ekblaw, M.S.; The Macmillan Company, Toronto and New York; 5 1/4 x 8 inches; 347 pages, illustrated.

Professor Ekblaw is associate in agricultural engineering, University of Illinois, and an associate member of the American Society of Agricultural Engineers. His book is written for the information of farmers who recognize the advantages of good farm buildings and modern conveniences, and for the use of teachers and students of farm economics. It deals with building materials, location of farm buildings, construction, estimating, design, ventilation, lighting as well as heating farm houses, water supply and plumbing and sewage disposal. Granaries, machine sheds, ice houses, silos, storage barns and barns for horses, cattle, sheep, swine and poultry, are all described and the text is illustrated with modern plans. The sections on lighting and heating farm houses, water supply and the disposal of sewage are of special interest and value to those who would enjoy in the country the comforts of a modern city dwelling.

The Farm Woodlot, by E. G. Cheyney and J. P. Wentling; The Macmillan Company, Toronto and New York; 5 by 8 inches, 343 pages, illustrated.

The purpose of the authors—the Director and the Associate Professor of the College of Forestry of the University of Minnesota—was to aid the farmer in the establishment, care and utilization of the small tree clothed portions of his farm. Besides a history and the significance of forests, which are briefly sketched, the actual operations and the information necessary to conduct them are described accurately in popular style. The work is divided into fifteen chapters which follow in natural sequence for either the farmer or the agricultural student who should be familiar with the possibilities of all farm lands. Reference is made in the "History of the Forest" to forest services and organizations in Canada, both federal and provincial, for the protection and development of forest lands. Dealing with the influence of forests, the authors, while not prepared to affirm the belief that they influence rain fall, do point out that they directly control the permanent flow of springs.

DIMENSIONS OF DOMINION AND PROVINCIAL REPORTS AND BULLETINS.

Officials who have undertaken to collect and file publications of the various Departments of Agriculture in Canada, will have been impressed with the irregularity of their dimensions. Here they are:—

<i>Manitoba—</i>		
Bulletins		6" x 9".
Reports		6 5/8" x 10".
<i>Saskatchewan—</i>		
Bulletins		6 13/16" x 10".
Reports		6 11/16" x 10".
<i>Alberta —</i>		
Bulletins		6 11/16" x 9 7/8".
Reports		6 1/2" x 10".
<i>British Columbia—</i>		
Bulletins		6 7/8" x 10 1/16".
Reports		7 3/8" x 10 3/8".
		6 15/16" x 10 1/4".
<i>Dominion Department of Agriculture —</i>		
Bulletins and Re-		
ports.. . . .	6 1/2" x 9 3/4".	
THE AGRICULTURAL		
GAZETTE.....		6 1/2" x 9 3/4".
That uniformity is desirable there can be no question. Let some one suggest what the dimensions should be.		
<i>Prince Edward Island—</i>		
Reports		6 5/8" x 9 3/8".
<i>Nova Scotia—</i>		
Bulletins		8 1/2" x 5 3/4".
Annual Report		6 7/16" x 9 3/8".
<i>New Brunswick—</i>		
Bulletins		5 15/16" x 8 3/4".
Reports		6 7/16" x 9 1/4".
<i>Quebec—</i>		
Bulletins		5 7/8" x 8 3/4".
Reports		6 1/2" x 9 13/16".
<i>Macdonald College—</i>		
Bulletin.. . .		6 1/16" x 9 1/8".
<i>Ontario—</i>		
Bulletins.. . .		6 9/16" x 9 5/8".
Reports.		6 1/2" x 9 5/8".
		6 7/16" x 9 9/16".

NEW PUBLICATIONS.

THE DOMINION DEPARTMENT OF AGRICULTURE.

ONTARIO.

THE DOMINION EXPERIMENTAL FARM.

Bulletin Number 79 of the Experimental Farm is entitled *Renovation of the Neglected Orchard*. It has been prepared by M. B. Davis, B.S.A., Assistant to the Dominion Horticulturist. Special attention is given to the following practices: Heading back old trees; thinning, scraping, cleaning and tree surgery; cultivation and cover crops; systems of cultivation; fertilization; spraying and thinning fruit. The bulletin is generously illustrated. It has been prepared with a view of showing how, by a reasonable amount of labour and care, profitless old orchards, which are a menace to the local orchard industry, may be made a remunerative part of the farm and a credit to the neighbourhood.

THE LIVE STOCK BRANCH.

Care of the Ram and Ewes during the Breeding Season, by T. Reg. Arkell B.S.A., and Norman Stansfield. This is an illustrated pamphlet of 16 pages, and is No. 8 of the Sheep and Goat Division, and belongs to the Management of the Small Flock Series. It is divided into two parts, the first few pages dealing with the selection, summer and winter care of the ram and winter feeds and feeding, and the latter pages outline the general care of the ewe during the breeding season.

THE ENTOMOLOGICAL BRANCH.

Circular No. 4, prepared by Dr. C. Gordon Hewitt, Dominion Entomologist, gives instruction to importers of trees, plants and other nursery stock into Canada, and concludes with the text of The Destructive Insect and Pest Act.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE.

QUEBEC.

"The Milk Supply of Montreal" is the title of a report of a bacteriological investigation of the milk supply of the city of Montreal in 1913-14. The investigation was carried on by F. C. Harrison, D. Sc., Principal of Macdonald College, A. Savage, B.S.A., and W. Sadler, N.D.D. The report represents the work of several months and contains a vast amount of useful information that might, with advantage, be studied by those interested in the milk supply of large cities. This investigation and the publishing of the report were accomplished largely with funds provided under The Agricultural Instruction Act.

Thirty-fifth Annual Report of the Ontario Agricultural and Experimental Union, 1913. This report, of 104 pages, includes complete returns of the experiments conducted throughout the province of Ontario in 1913, as well as the text of the addresses delivered at the annual meeting of the Experimental Union and at the opening ceremonies of the new Field Husbandry building.

MANITOBA.

Farm Poultry in Manitoba, by M. C. Herner, B.S.A., Professor of Poultry Husbandry, Manitoba Agricultural College. This bulletin is a revised edition of No. 6 of the Department of Agriculture, and deals with the poultry industry in its various phases. It is also suitably illustrated and includes a complete plan for a suitable poultry house for 100 hens.

Improving the Farm Egg, Circular No. 23 of the Poultry Department of the Manitoba Agricultural College. This pamphlet outlines a few simple rules, which, if followed, would eliminate a large percentage of the loss and waste in the Canadian egg trade.

SASKATCHEWAN.

Rules to Observe and Precautions to Take in Growing Profitable Crops on the Dry Lands of Saskatchewan. This is a 4-page pamphlet, which makes a request for greater production, and offers suggestions regarding the summer fallow and spring work.

BRITISH COLUMBIA.

The Care of Milk and Cream, by T. A. F. Wiancko, Dairy Instructor and Inspector. This is circular bulletin No. 9 of the Live Stock Branch of the Department of Agriculture, and is a practical treatment of the subject of the care of milk and cream.

DEPARTMENTS OF EDUCATION.

ALBERTA.

Bulletin No. 2, relating to Night Class Instruction in Mining Centres, outlines the regulations providing for night class instruction in Mining centres, and the courses of instruction offered. These include (a) courses in English for the non-English speaking; (b) preparatory courses, which include English, mathematics, mechanics and elementary applied science; (c) courses in coal mining.

MISCELLANEOUS.

The Report of the Fifth Annual Meeting of the Commission of Conservation held in Ottawa in January, 1914. This constitutes a volume of 287 pages and contains a report of the fifth annual meeting of the Commission of Conservation held in Ottawa in January, 1914, also summary statements of the work done under the several committees of the Commission during the fiscal year ending March 31st, 1914. The committees thus reporting were those on Public Health, Forests, Minerals, Water Power and Lands. Among those papers read at the annual meeting the following might be mentioned. The Protection of Migratory Birds; Progress of Fur Farming in Canada; A Plea for City Planning Organization; Aspects of Illustration Farm Work.

Studies in Rural Citizenship is the title of a pamphlet prepared by J. S. Woodsworth, Secretary, Canadian Welfare

League, Winnipeg; designed for the use of grain associations, women's institutes, community clubs and groups desirous of obtaining an intelligent view of rural life in Canada, with its various needs and possibilities. It has also been authorized by the Canadian Council of Agriculture. This book outlines a course of studies, which includes the following: Changed Conditions Demand a New Programme; The Country Life Problem in Outline; Proposed Solutions—(a) The Better Farming Movement, (b) Better Business—Cooperation, (c) Bigger Profits—The Economic Situation; The Rural Home—Yesterday and To-morrow; The Rural School—Its Development; The Rural Church—Has it Found Itself?; The Socialization of Rural Communities; Land Tenure—Taxation; The Tariff; Public Ownership and Control—Railways, Markets, Banking, etc.; Citizenship and Party; Direct Legislation; The Woman Movement—Equal Suffrage; International Peace.

NOTES.

The thirty-eighth annual convention of the Dairymen's Association of Eastern Ontario will be held in the City of Peterboro on January 6th and 7th, 1915. The Secretary is T. A. Thompson, Almonte.

The Saskatchewan College of Agriculture announces a Provincial Seed Fair and Agricultural Convention at the College on January 12th to 15th inclusive, and a short Course in Agriculture at the College during the whole of the following week.

The Department of Dairying of the Iowa State College this year will give a course in Market Milk at the time of the regular short course, beginning on December 28th, and closing on January 7th.

L. A. Moorhouse, M.S., Professor of Field Husbandry, Manitoba Agricultural College, has given up his position to accept an appointment on the Farm Management Branch of the United States Department of Agriculture at Washington, D.C.

L. N. Davis of Toronto, has been appointed District Representative of the Ontario Department of Agriculture for Port Arthur, in the absence of Lieutenant Lattimer, who has volunteered for the front.

Mr. Charles Murray, B.S.A., until recently connected with the Lands Branch of the Commission of Conservation, has been appointed manager of the Demonstration Farm operated by the Alberta Department of Agriculture at Athabasca Landing, Alberta.

The Board of Agriculture of Waterloo County, Ontario, has had a prosperous season. It has organized three new clubs, held plowing matches in three townships and has formed a Seed Centre, in connection with The Canadian Seed Growers' Association. This Centre undertakes to produce the Dawson Golden Sheaf Fall Wheat and O.A.C. No. 72 Oats.

In connection with the Short Courses in Agriculture to be held at Woodstock and Sussex by the New Brunswick Department of Agriculture, from January 5th to 12th and from February 16th to March 26th respectively, short reading courses for the students are to be prescribed.

During the season of 1914 twenty-one apiary inspectors were employed by the Ontario Department of Agriculture under the supervision of Morley Pettit, Provincial Apiarist. These inspectors made a total of 1,316 visits to apiaries, finding 519 apiaries diseased, and in these apiaries 2,714 diseased colonies out of a total of 9,113.

The Manitoba Agricultural College conducted a night school in poultry husbandry in December, with an enrolment of seventy-one students from the city of Winnipeg. The course was specially put on for the benefit of city people who desire to keep fowl on their small city lots. Professor Herner, who had charge of the course, reports that the students exhibited a keen interest in the work.

The situation arising out of the present war of the European nations has led to the closing of the Canadian office of the German Potash Syndicate. This office, situated at Toronto, was the headquarters of a staff of fertilizer specialists, who have for a number of years, conducted a campaign of educational and experimental work over the older provinces of Canada.

The Board of Agriculture in Grey County, Ontario, has this year issued a report full of statistics and other valuable information about the county, its crops, the yield per acre, the number and value of the horses and cattle together with a list of the breeders of pure bred stock, horses, cattle, sheep and swine in the county. Mr. J. F. Brownlee, Ravenna, Ont., is the chairman and Mr. T. H. Binnie of Priceville, Ont., is the secretary-treasurer.

Macdonald College has issued a fifteen page pamphlet announcing and describing the series of short courses to be held during January and February, 1915. The following are the courses announced:

1. *Lectures on Live Stock, Field Crops, Horticulture, Poultry and Farm Home* at the following places in the province:—Magog, Coaticook, Ayers Cliff, Scotstown, Sawyerville, Marbleton, Danville, Richmond, South Durham, Hemmingford, Athelstan, Kensington, Bedford, Knowlton, West Shefford, Lennoxville, Waterville, Calumet Isle, Chapeau, Elmside, Breckenridge.

2. *Horticulture*—at Macdonald College, February 8th to 12th.

3. *Poultry*—at Macdonald College, February 15th to March 6th.

4. *Dressmaking*—at Macdonald College, January 4th to March 19th.

Agricultural College Extension work in Manitoba has been placed under the superintendency of S. T. Newton, who for the past few years has been assistant superintendent of the manual training department in Winnipeg schools, and for two years head of the technical department of Kelvin High School. Of recent years also he has spent his summers at special observational and investigational work for the Canadian Conservation Commission, reporting on general conditions on Manitoba farms and soil survey work.

The Statistics Branch, of the Department of Agriculture in British Columbia, has been engaged, this year, in obtaining accurate figures and data, relative to the quantity and value of agricultural products imported into the province from Dominion points, by Farmers' Institutes. For this work a form was sent to the secretary of each Institute in the province which asked for data, giving the quantity and value of the hay, whole grain, milled stock feed and flour imported direct by the Institute.

During the past year, at 12 different points in the counties of York, Carleton and Victoria, N.B., fertilizer experiments were carried on and under the supervision of the Department of Agriculture. The farmer was asked to use a mixture made from standard fertilizer materials against the brand of factory-mixed goods he happened to be using. In this way the home-mixed fertilizer was put into competition with a number of various makes on the market. Enough of the materials were used in each case to make the equivalent of a half ton of the factory-mixed brands, and each used on an equal area. The results obtained were very strongly in favour of the home-mixed fertilizer.

The Department of Agriculture of British Columbia announces to secretaries of Farmers' Institutes and of Fruit Growers' Associations, and to directors of the British Columbia Fruit Growers' Association, that it has been decided to reduce the fees for Pruning and Packing Schools this season, to \$1.00 for Pruning Schools and \$2.00 for Packing Schools.

Entry forms are sent to the secretaries for schools that will be held according to the entries received. No school can be held unless there are at least eight entries for Pruning Schools and twelve for Packing Schools.

The department will issue diplomas to pupils of Pruning Schools who are recommended by the instructors as possessing the necessary qualifications to perform or supervise practical orchard pruning

The following is a list of the books in the permanent libraries furnished to Home-makers' Clubs in Saskatchewan by the University of Saskatchewan: Practical Cooking and Serving, Janet MacKenzie Hill; Boston Cooking-school Cook Book, Fannie M. Farmer; Our Domestic Birds; Work and Programs for Women's Clubs, Caroline French Benton; Home Science Cook Book, Lincoln and Barrows; Household Foes, Alice Ravenhill; Adventures in Contentment, David Grayson; Farm Dairying, Laura Rose; First Aid to the Injured, St. John's Ambulance Text; The Healthful Farm House, Helen Dodd; The New Freedom, President Wilson.

The fifth annual exhibition of Seed Grain will be held at Quebec on the 27th and 28th of January, 1915, under the auspices of the Department of Agriculture of Quebec, with the co-operation of the Federal Department of Agriculture. A feature of the exhibition will be a special competition for boys and girls, not less than twelve and not more than eighteen years of age, resident in Quebec, the exhibit to consist of a sheaf of wheat or oats composed of a sufficient number of plants to make a compact sheaf of approximately 3 inches in diameter, the plants to be selected by hand from the standing crop and must show the full length of straw.

Prior to April, 1913, according to the report of the Superintendent of Instruction, there were but 18 consolidated schools in the 99 counties of the State of Iowa. During the last year and a half about 60 new consolidated districts have been organized. The following statistics respecting 16 consolidated districts in the state reveal the progress of the movement.

The average amount paid 63 drivers in these 16 districts was \$46.91 per month. Total number of students transported, 1,039, of which 284 were hauled more than four miles, and the number of children on the road more than one hour, 191. The average length of the routes is five and one-half miles, and the longest route is eight and three-fourths miles. One wagon did not run for three days, one missed one day, and another a half day. The average number of mills levied in these districts was 21.9. Only one of these schools had less than nine months of school.

The attendance in the consolidated school is higher than in any other type of school, showing that transportation is feasible. The following averages of the schools of Iowa were made for the year 1912-13; attendance at consolidated schools, 80 per cent; town and city schools, 79 per cent; one-room schools, 72 per cent.

The Department of Trade and Commerce of Canada has received a request from the Government of New Zealand for 390,000 bushels of wheat. This has all been purchased and is being forwarded, 290,000 bushels via St. John, New Brunswick, and 100,000 bushels via Vancouver.

A course for creamery men will be given at the Manitoba Agricultural College from February 1st to 28th. The following is an outline in brief of the nature and extent of the work that will be taken up:

Dairy Lectures and Discussions; Creamery Management; Cream Separators. Those taking the course will be afforded the opportunity of separating milk under varying conditions, and of comparing the different makes of separators; Butter Making, including the preparation and use of cultures or "starters," the pasteurization of cream for butter making, the making and packing of butter, etc. Different makes of cream ripeners and churns will be used in the work; The grading and scoring of cream and butter; Milk Testing the testing of milk and cream, the preparation and testing of composite samples, the detection of adulterations, and the use of the acidimeter, and the moisture test; Cow Testing—this important branch of dairy work will be taken up fully, during the course; Dairy Bacteriology—lectures and laboratory work; Dairy Chemistry—lectures and laboratory work.

The fees charged will be merely nominal, viz.; A registration fee of two dollars, and a deposit of two dollars to cover avoidable breakages, both payable when entering upon the course.

The Great Northern Railway Company maintains an agricultural department with headquarters at St. Paul, Minnesota, in charge of an agricultural instruction agent. This department follows up the immigration work of the company by aiding the farmers in developing the lands which they have settled upon. In some cases the company rents pieces of land and arranges so that the owner himself works the land under the company's direction. This demonstration work has already shown itself productive of good results in developing a permanent agriculture.

The Extension Department of the Manitoba Agricultural College will conduct demonstrations and lectures on field crops, live stock, home economics, etc., at the following places, on the dates given:—

Killarney . . . January 4th, 11th, 18th, 25th.
Boissevain . . . January 5th, 12th, 19th, 26th.
Whitewater . . . January 6th, 13th, 20th, 27th.
Deloraine . . . January 7th, 14th, 21st, 28th.
Hazeldean . . . January 8th, 15th, 22nd, 29th.

The bankers in the middle Western states have formed an organization known as the Agricultural Commission of the American Bankers' Association. This organization issues a monthly periodical known as "The Banker-Farmer," a bright magazine containing concrete happenings and suggestions bearing on a better agriculture and rural life. It is published at Champaign, Illinois.

The President of the Manitoba Agricultural College reports, on December 21st, the attendance in the regular courses, for the fall term, as 274 in agriculture and 83 in home economics. This is an increase of 30 over the report published in the November number of the AGRICULTURAL GAZETTE.

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Can Germany Stand a Long War? by Frederick M. Halsey, page 521.

The Effect of the War on Commodity Prices, by Irving Fisher, page 524.

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DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR · J B SPENCER, B.S.A.

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OF CANADA

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THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

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CORN.

CORN is one of the staple crops of the world. As food for man it occupies an important position and for farm animals it stands at the head of all crops in quantity and value of grain and fodder.

In weight of grain corn is surpassed only by wheat in the world's production of cereals. When reckoned in bushels it stands next to oats in harvest returns. In those countries adapted to its production it is more extensively grown than any other grain and climatic conditions alone limit its more widespread cultivation. The total world's crop of corn exceeds three and one-half billion bushels. Of this stupendous quantity the United States grows more than seventy-five per cent where the total production is about four times that of wheat. The following figures show the comparative world's crops by weight and by bushels of leading cereals for the average of the five year period— 1908-1912:—

	Tons of 2,000 lb.	Bushels.
Wheat	104,339,000	3,477,995,000
Corn	103,248,000	3,687,463,000
Oats	66,871,000	3,933,673,000
Rye	47,057,000	1,680,629,000
Barley.	33,857,000	1,410,731,000

In Canadian agriculture corn has filled an important place from the beginning. The Indians and early settlers found it useful as a means of sustenance. Early writers say that the Indians girdled the trees to destroy their leaves and let in the sunshine, scratched the ground, dropped in the seed and secured a crop. The white man found it of the utmost value before the soil could be cleared and cultivated for wheat and rye.

By the aid of science great progress has been made in extending and improving the corn crop in Canada. Thirty-three years ago, 1881, the corn crop of the Dominion was recorded to be 9,025,142 bushels, whereas in 1913 it was 16,772,600 bushels. In 1893 the yield of fodder corn was 1,049,524 tons and in 1913, 2,616,300 tons, to say nothing of the improvement that has been made in the quality of the crop. In this improvement almost every province has been active. What has been done is fully stated in this number of THE AGRICULTURAL GAZETTE.

THE STANDARDIZING OF PUBLICATIONS.

THE suggestion made in the January number of THE AGRICULTURAL GAZETTE, for the standardizing of publications issued by Departments of Agriculture, has met with fairly general approval.

No sooner had it come to the attention of Prof. M. Cumming, Secretary for Agriculture for Nova Scotia, than action was taken in the desired direction. Having the manuscript for a bulletin ready for the printers, Prof. Cumming ordered it to be made the same size as the bulletins of the Dominion Department of Agriculture, which is also the size of THE AGRICULTURAL GAZETTE OF CANADA.

Mr. William McIntosh, Curator of the Natural History Society of New Brunswick, at the request of the Acting Secretary for Agriculture, has gone carefully into the question, and decides that the difference in the size of agricultural bulletins issued throughout Canada is not great, and that uniformity may be obtained by cutting to a standard size, without altering, to any extent, the size of the printed portions.

Excepting the British Columbia report, which is larger than any of the other publications, they fall into two groups. Publications of Group 1, which include all, except bulletins of Manitoba, New Brunswick, Nova Scotia and Quebec, have a maximum length of 10 inches, a minimum length of $9\frac{3}{8}$ inches, a maximum width of $6\frac{3}{4}$ inches and a minimum width of $6\frac{7}{16}$ inches, which is only $\frac{5}{8}$ of an inch difference in length and $\frac{3}{8}$ of an inch difference in width. Most of them have a printed area of 4 x 7 to 5 x 8 inches, leaving ample room for trimming to a volume $6\frac{1}{2}$ x $9\frac{3}{4}$ inches. The Dominion and Ontario reports and bulletins and the Quebec reports all come within 1/16 of an inch of this size.

Publications of Group 2 have a maximum length of 9 and a minimum length of $8\frac{1}{2}$ inches; a maximum width of $5\frac{15}{16}$ and a minimum width of $5\frac{3}{4}$ inches, being a difference of $\frac{1}{2}$ of an inch in length and $\frac{3}{16}$ of an inch in width.

Mr. Roadhouse, Deputy Minister of Agriculture for Ontario, suggests the present size of the reports and bulletins issued by the Ontario Department of Agriculture.

Mr. Moorhouse, Assistant Deputy Minister of Agriculture for Manitoba, states that the present size of their publications is in every way satisfactory.

Mr. Mantle, Deputy Minister of Agriculture for Saskatchewan, observes that if Nova Scotia would lengthen its bulletins and British Columbia shorten theirs, the question would be largely solved. He states that the bulletins and reports issued by their province are standardized by the government printer with those of other departments of the service.

Mr. Geo. Harcourt, Deputy Minister of Agriculture for Alberta, writes as follows: "I have consulted the various heads of the branches of this Department and the general opinion appears to be in favour of either the size of our own bulletins, which is intended to be $6\frac{1}{2}$ by 10, or that of THE AGRICULTURAL GAZETTE, $6\frac{1}{2}$ by $9\frac{3}{4}$.

Mr. Scott, Deputy Minister of Agriculture for Victoria, considers that it would be difficult to bring about a standard, and cannot see that any very useful purpose would be served thereby.

THE AGRICULTURAL GAZETTE recommends for consideration the points brought out by Mr. McIntosh of New Brunswick.

PART I.

Dominion Department of Agriculture.

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED.

THE DOMINION EXPERIMENTAL FARMS.

THE DIVISION OF AGROSTOLOGY.

INDIAN CORN FOR ENSILAGE.

BY M. O. MALTE, PH.D., DOMINION AGROSTOLOGIST.

IN Canada, the problem of growing Indian Corn profitably for ensilage has, during the past years, attracted considerable attention perhaps chiefly because its success has so often been disputed. It has been claimed that Canada is situated too far north and that, consequently, corn, being a southern plant, could be of no universal importance in the Dominion. On the other hand the most enthusiastic advocates of corn growing have brought forward seemingly convincing evidence, to the effect that the successful growing of corn for ensilage, must necessarily be the very foundation upon which should rest the prosperity of the dairy farmer, and even the future fame of Canada as a mixed farming country.

The truth lies in the middle, as is generally the case. That is to say there are districts in Canada, where Indian corn could and should be grown to the greatest advantage, but on the other hand there are thousands of square miles where the profitable growing of Indian corn, would prove very difficult at present, if not impossible.

Remember, that the climate and the length of the growing season militates against successful corn-raising in many parts of Canada. To make the same a success, human knowledge must battle against the very nature of the corn plant, analyze it, and as a result thereof, forcibly develop those forms and varieties, which in spite of hardships, are able through their specific yielding capacity to meet not only the humblest expectations of the farmer, but also to make his investment a paying proposition.

To prove to the farmers, the relative value of different corn varieties, in different provinces and districts thereof, has been for scores of years the object of the vast multitude of experiments carried out by the Experimental Farms' system. Although, of course, these experiments are far from being finished it can safely be stated, that most valuable results have been gained.

Thus, the experiments have proven that the quantity of ensilage raised per acre should under all circumstances be viewed in the light of its quality. That is to say, that the

quality of the ensilage produced by a certain variety of corn should be the factor which should guide the farmer in his choice of the variety. Many varieties may give a superior yield fascinating to the casual observer, but nevertheless prove inferior for ensilage purposes to others which are capable of producing only a comparatively scant yield. The reason for this is, that the feeding and milk-producing value of the corn ensilage depends upon the degree of maturity of the corn. A variety which produces stalk and leaves during the growing season, but fails to bring its cobs to a sufficient degree of maturity, will furnish a comparatively poor material for ensilage.

The ensilage will be acid, deficient in nutritive constituents and on the whole prove a rather expensive feed, when viewed from a practical, dollar and cent standpoint. On the other hand a variety which is capable of reaching the stage of maturity in which the feeding value is the very highest, that is to say the "glazed" stage, may in reality prove superior in spite of the fact that its yield, as far as tonnage is concerned may seem to indicate the contrary.

Briefly, the experience gained by the Experimental Farms demonstrates the wisdom of increasing the acreage of early varieties rather than of depending on large yielding late sorts for the desired tonnage.

THE DIVISION OF HORTICULTURE.

THE PROPAGATION OF ORNAMENTAL PLANTS SUITABLE FOR SCHOOL SURROUNDINGS.

BY F. E. BUCK, B.S.A., ASSISTANT IN ORNAMENTAL GARDENING.

THE aim of the teacher is to make the country school a centre of useful influences, at least that is an aim which the rural school teacher each year finds more possible of realization. The school as an educational centre, a social and recreational centre, and a centre from which there shall spread the longing to have really creditable and beautiful rural homes, is not at all a visionary idea and is perhaps realizable for every rural school in the land.

The seed of this idea is already germinating and the resulting plant is bound to yield much valuable fruit to nourish the physical, social, and spiritual life of the nation.

In offering a suggestion with regard to the function which the rural school may fulfil, in connection with the delightful task of disseminating a greater love of the beautiful among its pupils and their parents, it is only natural to recall the handicaps

which envelop some rural schools. Lack of any appreciation, on the part of parents and trustees, of the material and ethical value of beauty, lack of room around the school house, or a very shabby looking building, lack of funds and what not. But such things to the teacher with vision need not totally discourage. With every idea a beginning must be made, and where a beginning has been made already so much the better.

The subject of this paper "Propagation of Ornamental Plants," in many of its aspects is not new to the teacher, although it may be new to many of the children. Whether it is so or not, it may be used as the basis for either starting or helping forward the work of creating more rural beauty, with the school as the centre of the movement.

The first thing to reflect on is how to start such work in a practicable, simple way and with some hope of

success, especially if the task of obtaining funds for such work is difficult. The best advice that can be given on this point is to say that, if the school grounds have received that preliminary attention in the matter of grading and levelling, etc., and if funds are procurable for the purpose, it will be wise to purchase a few hardy shrubs and ornamental trees from a reliable nursery company and plant them out at once. But supposing this is accomplished already and that the school grounds are laid out to play-ground, school gardens, etc., or, supposing the school grounds in any condition you please, there is still a great opportunity for the rural school to become a strong influence in disseminating true beauty and fragrance throughout many rural communities, and this by means of a thoroughly workable and simple plan. More than twenty-five years ago the Central Farm at Ottawa began the work of testing ornamental plants to obtain suitable varieties for the different conditions of our Canadian climate. There soon followed the work of distributing these plants to Branch Farms in different parts of the country. The results to-day are that there are numbers of beautiful grounds, driveways, parks, public institutions, etc., which owe their beauty to plants thus disseminated; many were raised from seed, cuttings, etc., at the Central Farm, Ottawa. What the Central Farm has been to the Dominion at large, the rural school may become to the community it serves.

THE METHOD.

The suggestion is then, that it would be a practicable and quite simple scheme for the teacher of each rural school to start a small school nursery. This nursery might consist of a twelve foot strip, or less, at one end of the school grounds. It must be prepared to receive the plants which may be raised from

seed and cuttings in a still smaller seed bed. The seed bed then is the first thing to be started. And what shall be started in it? Only the seed of those plants which are hardy, beautiful, and suitable—suitable for two purposes: First, to plant around the school grounds in those positions where trees, hedges, shrubs and flowers will help to beautify the school house and grounds, and secondly, to distribute amongst the pupils so that they may take home a few shrubs such as lilac, honeysuckle, Japanese rose, etc., to plant around their own homes.

PREPARATION OF THE SEED BED.

The preparation of a suitable seed bed in which the seeds of shrubs and perennial flowers may be sown will involve about a day's careful work, not more. The beds as prepared at Ottawa for this purpose are very simple affairs. The beds are made four feet wide and any length, six-inch boards are used and these are kept in position by stakes driven into the ground every few feet to which the boards are nailed. Inside the area enclosed by the boards the soil is thoroughly prepared, all coarse stones, weeds, etc., are taken out and finally, as a top-dressing, a layer of several inches of good quality, fine sandy loam is applied. This is in order that the seeds may have every chance to germinate properly. The only other thing that is necessary is something with which to shade the young plants as they are coming up. For this purpose any sort of coarse canvas may be nailed to a frame and used, or laths nailed together to form a lattice, form equally useful shading material. In fact many methods of shading may be used with equal success.

SOWING THE SEED.

In sowing the seed little trenches are made crossways of the bed. That is, the rows are each four feet long, and these trenches, which are made

very best vine for covering the house is also found wild in many parts. It is easily raised from cuttings and the many thousands which have been sent out from the Central Farm have all been raised that way. The cuttings are taken from plants growing on the buildings around the Farm. They are taken just after the leaves fall in the autumn. Wood not quite as thick as a lead pencil is selected and cut into lengths a foot long. These cuttings are placed base downward in sand for the winter during which period a callous forms over the cut ends. In the spring they are planted out. They must be buried for about three quarters their length. Roots will then form, and later on, from the buds left above the ground, leaves will shoot out. Cuttings may be made from some other suitable plants, as given in the following list, in a similar manner, although in most cases where seed can be obtained it should be used. The seed of some shrubs which has a very thick seed-coat will not germinate until it has been left in the ground for one whole year, or longer, and, therefore, the seed-bed should not be dug up too hastily.

The Central Farm each year makes, for experimental purposes, a small distribution of such seed as is collected on the Farm grounds. Those teachers who wish to start work similar to that suggested in this article, and who make timely application for it, would be welcome to such seed as could be spared from the Farm collection. The quantity of such seed is, of course, limited.

Some of the trees, shrubs, and perennial flowers which could be most easily raised from seed, which are perhaps most suitable for school and home surroundings are as follows:

FROM SEED.

1. Trees:—
Sugar Maple.
White Spruce.

Green Ash.
Norway Maple.
Scotch Pine.
Manitoba Maple (for the Prairie Provinces).
Basswood.
Arbor-Vitæ or Cedar.

2. Small Trees:—
Siberian Pea Tree.
Mountain Ash.
Japanese Tree Lilac.
3. Shrubs:—
Japanese Barberry.
Japanese Rose.
Bush Honeysuckles.
Wayfaring Tree.
Common Lilacs.
Snowberry.
4. Perennial Flowers:—
Columbines.
Shasta Daisy.
Blanket Flowers.
Phlox.
Hollyhocks.
Pinks.
Bell-flowers.
Sunflowers.
Foxgloves.
Oriental Poppies.
Larkspurs.
Coreopsis.

FROM CUTTINGS.

5. Trees:—
Poplars.
Willows.
Arbor-Vitæ or Cedar.
6. Shrubs:—
Van Houtte's Spiræa.
Honeysuckles.
Flowering Currant.
Privet.
Mock Orange.
Dogwoods.
7. Self-fastening Virginian Creeper.

NOTE:—On account of the hardness and thickness of the seed coat of such seeds as the Basswood, and sometimes the Japanese Rose, it has been found that the seed when sown in the autumn, soon after ripening, will not germinate in the spring with the seeds of other plants. It remains dormant in the ground for a year and a half. Most of it will germinate, however, in the second spring.

Cuttings of the willows and poplars will root in any good moist soil, but those of the cedars and most of the shrubs will succeed best in a moist, sandy soil. All cuttings should be kept shaded.

Cuttings of currants, both the red and black varieties, will root very easily and the illustration shows how a cutting transforms into a plant in one year.

CONFERENCE OF OFFICERS.

FROM January 14th to 19th, there was held, at the Central Experimental Farm, Ottawa, a conference of officials of the Dominion Experimental Farms system. There were present, besides the director and the officers of the Divisions at the Central Farm, the following superintendents of the branch Farms and Stations distributed throughout Canada:—

J. A. Clark, Charlottetown, P.E.I.; W. W. Baird, Nappan, N.S.; W. W. Hubbard, Fredericton, N.B.; W. S. Blair, Kentville, N.S.; Jos. Begin, Ste. Anne de la Pocatière, Que.; G. A. Langelier, Cap Rouge, Que.; J. A. McClary, Lennoxville, Que.; W. C. McKillican, Brandon, Man.; W. A. Munro, Rosthern, Sask.; M. J. Tinline, Scott, Sask.; W. H. Fairfield, Lethbridge, Alta.; G. H. Hutton, Lacombe, Alta.; P. H. Moore,

Agassiz, B.C., and G. E. Parham, Invermere, B.C.

A regular programme of sessions was arranged and carried out, wherein the various lines of work being pursued or soon to be incepted were discussed and planned.

An opportunity was given of hearing and meeting the heads of some of the other Branches of the Department of Agriculture, those present at the luncheons given at the Farm on Friday, Saturday and Monday being addressed briefly by the Veterinary Director General, Dr. Torrance; the Live Stock Commissioner, Mr. Bright; the Dairy and Cold Storage Commissioner, Mr. Ruddick; the Seed Commissioner, Mr. Clark; the Fruit Commissioner, Mr. Johnston, and the Dominion Entomologist, Dr. Hewitt.

NOTE.

An experiment was carried on during the past season at the Lethbridge Experiment Station to ascertain the shrinkage of alfalfa hay in stacks. On the 30th of June there was stacked 10 tons, 1,000 lb. of hay as drawn from the field. This

stack, on the 2nd of January, weighed 9 tons, 250 lb., being a shrinkage of one ton, 750 lb., or about 15 per cent. The stack was 15 feet wide, 29 feet long, and when settled had an overthrow of 31 feet.

The subject of paramount importance in our correspondence and in the hearings is education. In every part of the United States there seems to be one mind, on the part of those capable of judging, on the necessity of redirecting the rural schools. There is no such unanimity on any other subject. It is remarkable with what similarity of phrase the subject has been discussed in all parts of the country before the Commission. Everywhere there is a demand that education have relation to living, that the schools should express the daily life, and that in the rural districts they should educate by means of agriculture and country life subjects. It is recognized that all difficulties resolve themselves in the end into a question of education.—*Report of the United States Country Life Commission.*

THE ENTOMOLOGICAL BRANCH.

SOME CANADIAN RODENTS INJURIOUS TO AGRICULTURE.

BY NORMAN CRIDDLE, FIELD OFFICER, ENTOMOLOGICAL BRANCH, DEPARTMENT OF AGRICULTURE, OTTAWA.

THE rodents are among the most injurious of the mammals. Small in size, but vast in numbers, they continuously pursue their work of destruction, causing losses which are impossible to estimate, but which in the aggregate must be enormous. Among the smaller rodents, rats and mice are the only ones generally recognized by the public, and of these the common House Mouse, *Mus musculus*, and the Brown Rat, *Epimys norvegicus*, are among the few that are well known. Both these species were introduced into Canada and have since become widely-spread, the former now being found over most of the continent, while the latter is rapidly following in the former's footsteps. Apart from these introduced animals, however, we have a number of native ones, some of them equally destructive and it is of these that I propose to deal with in this article.

Of native rats we have none, nor are there any other mice of the genus *Mus* in Canada, but of field mice there are numbers; indeed we have more than eighteen species of the genus *Microtus* alone, several of which are exceedingly injurious, though it does not follow that they are necessarily all so. For instance, Dr. Hewitt* records *Microtus agrestis* as destroying numbers of the Large Larch Sawfly cocoons in Great Britain; Dr. A. K. Fisher describes similar habits of *Peromyscus artemisiae* in Michigan, while a third kind almost surely *Microtus drum-*

mondi has been known to destroy fully 50 per cent of the sawfly cocoons in a certain swamp near Treesbank, Manitoba.

The following brief account will give an idea of the economic importance of some of our commoner rodents:—

Deer, or White-footed Mice, (*Peromyscus* spp.) destroys grain, particularly in the stook; they also enter farm buildings devouring grain and various other substances. In the north, the Arctic Deer Mouse (*P. borealis*) is said by Preble* to take the place of the House Mouse by entering dwellings, etc., at traders' posts.

The Red-backed Voles (*Eutamias* spp.), like the White-footed Mice devour much grain, being especially troublesome while grain is in the stook or stack. They also injure young trees.

The Field Vole, (*Microtus pennsylvanicus*) is very destructive in parts of eastern Canada. Besides destroying cereals, it gnaws the bark off various trees, including apples.

Drummond's Vole, (*M. drummondi*) prefers low lands. It is stated by Preble† to have overrun much of Saskatchewan and Alberta, in 1900, causing great loss to crops. Various races are met with throughout the country, all having very similar habits.

Pocket Gophers, (*Thomomys* spp.) are very destructive everywhere in

*North Am. Fauna, No. 27, U.S. Dept. of Agriculture, 1908.

†North Am. Fauna, No. 27, U.S. Dept. of Agriculture, 1908.

*The Large Larch Sawfly, Bul. No. 10, Div. of Ent., Dept. of Agriculture.

western Canada, east of the Rockies. They make long subterranean tunnels near the surface and throw up heaps of earth not unlike those of a mole, for which animal they are frequently mistaken. In reality, however, there is no close relationship between the two. True moles are insectivorous in their food-habits and are therefore useful, whereas Pocket Gophers live almost entirely upon vegetable substance, their diet consisting of roots, including potatoes, carrots, parsnips, turnips, etc., and of grain including all the cereals. In their efforts to get at the latter they often partly bury stooks, destroy the bands of the sheaves, and cut off the grain heads, which they store with other food for winter use, using the pockets in their cheeks for the purpose of carriage. These

of the roots mentioned above in poison, such as is given out by various municipalities, or in a strichnine solution and then placing the roots in the runways. The most satisfactory method of controlling them, however, is by systematic trapping with ordinary gopher traps. For this purpose no bait is required but a little practice is necessary before proficiency is attained.

Jumping Mice, (*Zapus* spp.) are not common, but occur most frequently in the neighbourhood of low bush land. They do some mischief to grain in the stook.

Gophers or ground squirrels. These animals are entirely western, none being found east of Manitoba unless in the extreme north. There are about ten species or subspecies



HILLS OF THE POCKET GOPHER, SHOWING POSITION BY DOTTED LINES OF CONNECTING SUBTERRANEAN TUNNEL.

Modified Figure from Farmers' Bulletin No. 484, U.S. Dept. of Agriculture, Washington, D.C.

destructive rodents are almost wholly nocturnal in habit, doing most of their work during the darker hours between sunset and sunrise. Excepting during the breeding season and while the young are still immature, there is seldom more than one animal in the same net-work of burrows, while towards autumn, the young either leave of their own accord or are driven forth by their mother. They then wander over the country until finding a favourable feeding ground, they commence new burrows, being, owing to this habit, of particular annoyance to farmers and gardeners. Pocket Gophers may be poisoned by soaking pieces of any

in western Canada, some of which cause immense loss to the farming community amounting to thousands of dollars annually. Three species are particularly prominent in this work of destruction; namely, the Scrub, or Franklin's Gopher, (*Citellus franklinii*), the Prairie or Gray Gopher, (*C. richardsoni*), and the Striped Gopher, (*C. tridecemlineata*). Of these, the first named has a fairly wide range and extends over most of the semi-wooded area of Manitoba, Saskatchewan and Alberta to as far north as Athabaska Landing in the latter province. It readily attacks growing grain and also the ripened products, but is seldom found far

from the bushy wood-lands in which it makes its home.

The Prairie or Gray Gopher is by far the most destructive of any found in Canada. It ranges over practically the whole prairie area from Manitoba to the Rockies, at places in such numbers as to clear off the entire crop. This is particularly so of the newer settled districts to which the animals are said to come in thousands from the adjacent prairies to the newly sprouting crops, making it impossible for individual settlers to cope with them.

It is difficult to get at the exact figures as to the abundance and destructiveness of gophers, but Mr. Power, Secretary-Treasurer of the Municipality of Pipestone, Manitoba, has very kindly supplied me with some data in this respect which will give an idea how numerous these animals are even in western Manitoba. In the above mentioned municipality bounties ranging from one to three cents a head are given for gophers, the larger sum being supplied during the breeding season only. As a result of this bounty 72,578 animals were accounted for during the summer of 1913, and in 1914 more than 85,000 had been destroyed before the season closed. This does not, of course, include the gophers killed through the distribution of free poison. Yet, in spite of all these precautions, there is said to be no marked decrease in the numbers of individuals in comparison to previous years.

The Striped Gopher is much less common than the Prairie Gopher, and in habits is somewhat intermediate between that species and the Scrub Gopher. It has, however, a wide range in the Prairie Provinces but confines its attack far more to the ripened grain and less to the plants while they are growing. The injury it does, however, is by no means insignificant and unless kept in check it soon multiplies to destructive proportions.

Several other species of gophers are found in the north and extreme west. *C. columbianus* and the variety *albertæ* occur in the foot-hills of the Rockies, east to Maple Creek, Saskatchewan, and west well into the mountains. Two kinds are found in the extreme north around Hudson Bay and at the mouth of the Mackenzie River, but these last, it is interesting to know, are actually considered of value by the Indians for food purposes.*

The remedies for gophers are numerous, those most frequently in use being the various poisoned baits, of which the more practical are given below:—

Strichnine.....	1 ounce.
Molasses	½ pound.
Wheat	1 bushel.

Dissolve the strichnine in sufficient warm water to soak the grain without leaving a surplus of moisture. When used at once drying is unnecessary, but the grain should be dried quickly if it is to be kept any length of time, otherwise it will become musty or sour.

Another bait, probably the best of all, is made as follows:—

Strichnine (powder) . .	¼ ounce.
Tallow.....	10 pounds.
Salt	1 ounce.

Melt the tallow by heating and add the strichnine and salt. Keep heated until all is thoroughly mixed, then pour into a convenient receptacle to cool and afterwards cut into small lumps for placing in the gopher's holes. All such baits should be placed in burrows showing recent signs of being inhabited and in quantity sufficient for one meal. The practice of scattering poisoned bait promiscuously around about burrows is not only dangerous but wasteful; it also destroys many useful birds.

Another method of destroying gophers is by trapping and there are

*Preble, North Am. Fauna, No. 27, U.S. Dept. of Agriculture, 1908.

few ways that prove more successful when the work is systematically carried out. Apart from the ordinary steel traps these animals may be easily captured by means of a string noose placed at the entrance of a burrow with the end held in the hand a short distance away. Then, as the gopher inquisitively pokes out its head, the noose is jerked tight, thereby securing the animal around its neck.

Shooting is also an excellent method of reducing the numbers of gophers, the weapon most frequently used being a 22 calibre rifle. Hundreds may be secured in a day by this means at comparatively small cost.

As is the case with all our pests, however, be they mammals or insects, some sort of co-operation is necessary to reduce them to comparatively harmless numbers and it is only by some method of this sort that we can expect to be successful in our efforts. In this respect there is no doubt that gopher clubs organized along lines similar to sparrow or crow clubs, would aid much in reducing the pests and be of unquestionable value, which, however, cannot be said of crow clubs.

Chipmonks (*Eutamias* and *Tamias* spp.) are very destructive to grain and various garden seeds in the neighbourhood of woodlands; as a rule, however, they are not sufficiently numerous to cause widespread injury.

Squirrels (*Sciurus* spp.) steal everything available in the nature of grain, particularly where the same is not tightly housed. They also destroy eggs and young birds. While widely spread, however, they are seldom numerous enough to cause extensive loss.

Beavers (*Castor* spp.) cause inundation of low lands by means of their dams. They also destroy much timber.

Jack Rabbits or Prairie Hare (*Lepus campestris*) are injurious to various shrubs, apple trees, etc.

Varying Hare or Bush Rabbit (*Lepus Americanus*) attacks oats and other grain in the vicinity of woods; they are also destructive to gardens in summer, and in winter attack apple trees and other shrubs besides causing immense injury to young forest trees.

Cotton-tail Rabbit (*Lepus nuttalli mallurus*) has habits somewhat similar to the last mentioned species, but is less destructive and not so widely distributed.*

An account of noxious mammals would hardly be complete without reference to some of the animals that prey upon them, many of which are still destroyed through lack of knowledge concerning their habits. To begin with, there is a good word to be said in favour of Coyotes (*Canus lutrans*) and of foxes which, while doing much harm to poultry, as well as in the case of the former, to sheep, are nevertheless persistent hunters after rodents particularly rabbits, and thus largely compensate for the harm they do at other times.

The most useful of all our mammals, however, as destroyers of rodents are the various weasels, which curiously enough, are generally regarded only in the light of destroyers of poultry, whereas in reality they are only casual enemies in that respect and very great friends in every other.

The Least Weasel (*Mustela rexosa*) occurs over much in the prairie provinces north almost to the arctic circle. It is wholly beneficial and on account of its small size can easily follow mice along their runways. Fortunately the lack of a black tip to its tail protects it somewhat from the demands of fashion, though it falls a prey to the traps set for larger species.

*The economic value of the mammals mentioned above, apart from their relations to agriculture have been purposely omitted. In many instances, however, their uses for food and fur cannot, of course, be questioned.

Bonaparte Weasel (*Mustela cognaniti*) lives upon rats, mice, pocket gophers and common gophers. It has been known to live in buildings occupied by poultry without molesting them, and while it might, through hunger, kill an odd chicken, we have no actual evidence of it having done so. There is probably no more useful wild mammal in Canada.

Richardson's Weasel (*M. richardsoni*) is more of an eastern animal, it is rather larger than the last mentioned with very similar habits, though its greater size may induce it to more frequently attack larger game.

The Eastern Weasel (*M. novaboracensis*) is another useful kind living largely upon mice and rats.

The Long-tailed Weasel (*M. longicauda*), with its close allies, undoubtedly takes poultry at times, though it has also been known to occupy buildings inhabited by those birds without touching them. It is, however, the criminal for which others have often been blamed. Usually the food of this weasel consists of all the smaller rodents and includes hares or rabbits.

Without doubt much of the depredations at present caused by rodents are directly due to the lack of knowledge regarding weasels, but probably still more to the demands of fashion. At the present time hundreds of men and boys are busily engaged in trapping those animals for the price of their fur, in doing which they are causing a loss far in excess of the value paid for the skins. Viewing the question from an agricultural standpoint there is no question but that these animals should receive some protection.

Several other weasels occur in Canada, the habits of which probably do not differ very greatly from those discussed above, all, however, are becoming scarce through systematic trapping.

The value of Hawks and Owls as destroyers of rodents has been discussed frequently and should be known to everyone, though unfortunately this does not seem to be the case, and we still find that with most people, the occasional rading of a poultry yard is sufficient to condemn all species. Education is still very necessary to enlighten the general public of the folly of such proceedings.

THE FRUIT BRANCH.

PACKING SCHOOLS.

BY DONALD JOHNSON, FRUIT COMMISSIONER.

IN order to secure greater uniformity of judgment among the temporary fruit inspectors in regard to the grading and packing of fruit, a short course in packing was arranged for the Ontario staff. As the temporary inspectors for the Prairie Provinces were returning East in December, it was thought desirable to arrange this packing school so that they could join the Ontario inspectors for a week's instruction.

The school opened on December 14th, with twenty-one temporary inspectors in attendance, and the first few days were devoted to the actual packing of fruit. Each inspector, under the instruction of Mr. P. J. Carey, Chief Packing Expert for the Department, was required to show his ability to sort and pack apples in barrels as well as to grade, wrap and tier apples in boxes. The success of the school was most gratifying and it was found that all the men

were able to put up a splendid pack of apples, showing that they were well qualified for their work. In the evenings lectures were given by permanent members of the branch on the work in general, with special reference to all phases of the Fruit Marks Act.

The charge has sometimes been made that the inspectors operating in the Western Provinces condemned fruit that was passed by the inspectors in Ontario. While there was no ground for such criticism, yet it was felt that the interchange of ideas between the men working at the producing end and those located in the distributing centres of the West would be to their mutual advantage, and would entirely do away with the possibility of any similar criticism in the future.

A course along the same lines is being arranged for the Inspectors in Nova Scotia in charge of Chief Inspector Vroom, who will be assist-

ed by Mr. A. H. Flack, Chief Fruit Inspector for the Prairie Provinces. In addition to special instruction in box packing from Mr. Flack, it is felt that he will be able to give the Nova Scotian inspectors much valuable information regarding the markets of the West which their fruit is only now reaching in large quantities.

BOX PACKING DEMONSTRATIONS.

Mr. A. H. Flack, Chief Fruit Inspector for the Prairie Provinces, who is also an expert box packer, having received his experience in the packing houses of the Pacific Coast, spent a week (January 7th to 14th) at the Truro Agricultural College, where he instructed both the Short Course and the Long Course students in the art of packing in boxes. Other packing demonstrations are being arranged by the provincial authorities for Mr. Flack while he is in Nova Scotia.

THE SEED BRANCH.

THE CORN SITUATION.

DURING the last few years the Seed Branch has given special attention to the problems relating to the corn crop, particularly that grown for ensilage. The inspection of seed offered for sale by dealers throughout the country and the field work done by the Seed Branch district officers have clearly shown that the great need of the ensilage growers is an abundant supply of seed corn of strong vitality and of a variety and strain suited to the conditions under which it is to be grown. Numerous partial or total crop failures have come through using seed that would not grow, and as a result many farmers have adopted the practice of sowing much more seed than would

be required if it were all vital. If the seed is good, this heavy sowing gives too thick a stand, which, if not thinned, produces a crop poor in quality through failure of the ears to develop normally. In many instances poor crops result from using late varieties and strains which will not mature sufficiently to make good ensilage.

Until a few years ago, nearly all the available seed corn came from the United States. Some of it was of named varieties fairly well suited to Canadian conditions, but a great deal was ordinary commercial grain imported in carlots and often representing large late varieties grown in the central southern states. Such seed was entirely unsuited for Canada

on account of the variety and origin, and often the vitality was injured by heating.

The necessity for a better seed supply directed attention to southwestern Ontario as a possible source of acclimatized seed. Dent corn is grown extensively in the extreme southwestern part of the province, particularly Essex County, and recently many growers have been endeavouring to produce good seed in commercial quantities. The Seed Branch has given all possible assistance to this work. The district officer for western Ontario has given particular attention to the corn situation and much work has been done in the seed laboratory. It was soon found that most of the corn produced in southwestern Ontario was rendered unfit for seed by lack of proper storage facilities and insufficient drying. Except small quantities given special care by the grower for his own seed, practically all the corn was stored in the ordinary cribs. Unless it was well matured before it was put into the crib, the circulation of air was not sufficient to dry the corn enough to prevent injury to vitality through mould or frost.

STORING AND DRYING.

In order to secure information in regard to practical methods of storing and drying seed corn in commercial quantities, the Seed Branch district representative for western Ontario, with three members of the Ontario corn association, made a tour of inspection through Illinois, Indiana and other corn growing states. From practical growers and agricultural colleges much valuable information was secured. The general conclusion reached was that any building provided with good ventilation and so arranged that the corn can have free circulation of air around individual ears would be suitable for Canadian conditions. Artificial heat is not required unless

under exceptional circumstances. The information secured in respect to drying methods has been conveyed to many farmers' clubs and other organizations in the corn growing districts, through demonstrations at exhibitions and other means, and many growers have devised efficient and practical methods. One of the growers who made the trip of inspection built a drying house 16 x 150 feet for the 1913 crop. The seed stored in this building dried well although the autumn was unfavourable. In the early spring of 1914 the corn was sampled by Seed Branch officers for germination test. The average germination of the 570 ears tested was 99½ per cent, with 560 ears germinating 100 per cent. To encourage efficient drying methods, financial assistance toward the erection of corn drying houses has been offered to farmers' clubs.

SPECIAL SEED INSPECTION.

With the object of securing information in regard to the germinating qualities of the available seed in southwestern Ontario and protecting purchasers against shipments of poor lots, special seed inspection work was done last spring. Samples were collected from a large number of growers who had seed for sale and germination test reports were sent them. Over 4,400 individual ear tests were made, representing several thousand bushels of corn. In most cases the germination was satisfactory, but several lots were found with vitality below the legal requirements, due to immaturity and insufficient drying.

Just previous to planting time in 1914, an extensive inquiry was conducted throughout Ontario and the corn growing parts of Quebec to secure information in regard to the varieties grown in different districts; where the seed was secured, whether from dealers, direct from growers or homegrown; if purchased, whether shelled or on the ear; the area

planted, and whether in hills or drills. About 1,900 lots of seed were reported, representing 11,000 acres planted, and nearly 1,700 samples were collected. All the samples were tested for germination, the average being 87 per cent. The corn purchased on the ear averaged 6 per cent higher germination than the shelled, the proportion germinating 90 per cent and over being 26 per cent higher. A summary of the results of this inquiry was presented in the October number of the AGRICULTURAL GAZETTE and further details will appear in a bulletin now being printed.

One of the facts emphasized by the inquiry was the large number of growers using unsuitable varieties and the lack of definite information in regard to the varieties best suited to different districts. The latter

question is one of the most important in connection with the corn situation. Last spring, in co-operation with the Ontario Department of Agriculture, assistance was given in organizing a series of variety tests, in an attempt to secure the needed information. Seed of the leading recommended varieties was secured from reliable growers in southwestern Ontario and distributed to a number of the provincial district representatives who arranged with five or six farmers to grow one-eighth of an acre of each variety. The work last year was of a preliminary nature but some suggestive results were secured. These field tests will likely be extended to many more counties in the coming season and it is expected that they will be commenced in the corn growing parts of Quebec.

THE HEALTH OF ANIMALS BRANCH.

MUNICIPAL ABATTOIRS AND PUBLIC HEALTH.

BY F. TORRANCE, B.A., D.V.S., VETERINARY DIRECTOR GENERAL.

THE importance of a pure food supply for any population is so great that it hardly needs any argument. All progressive communities have taken steps to see that such articles of food as are most likely to be adulterated shall be properly inspected, and no city or town of any importance is not provided with inspectors of meat, milk and other foods.

The older communities have made much progress along these lines and vast improvements have been attained in their food supplies. In newer communities, such as those on this side of the Atlantic, while the milk supply is generally receiving more or less consideration, the meat supply is still in a very primitive condition. This is largely due to the ignorance of the public to the dangers

that may lurk in uninspected meat, to the fear that a proper system of meat inspection may be too costly for their resources, and sometimes to the opposition of those whose interest lies in maintaining things as they are.

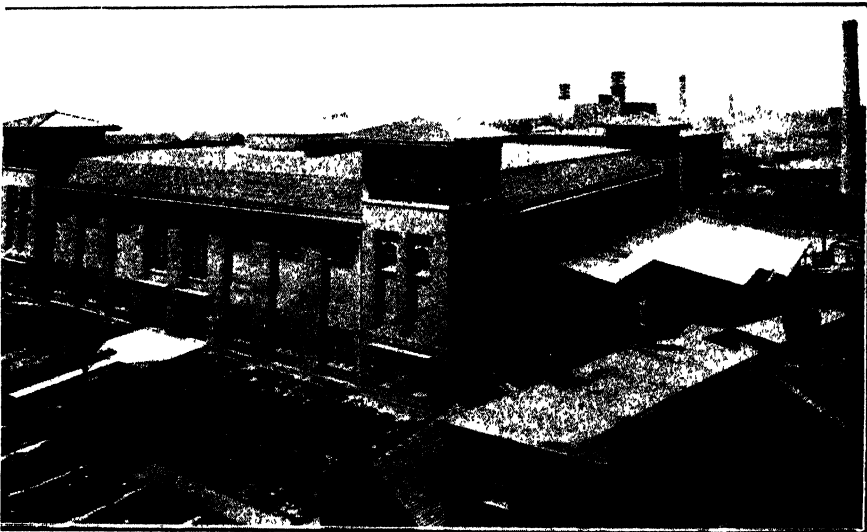
The inspection of meat is necessary from many points of view, but chiefly for the preservation of the public health against such diseases as may be communicated from diseased meat.

Inspection of meat after it has been prepared for the consumer is far from being efficient, and as a protection against the communication of disease, is of little practical value. A skilful and unscrupulous butcher can easily remove all evidence of disease from a carcass of meat in nine cases out of ten, and the

meat so prepared would easily pass the scrutiny of the average meat inspector.

The only inspection that is of any value is that which is conducted at the time of slaughter before the butcher has had the opportunity of removing the diseased organs from the carcass. Considerations of this kind have led many municipalities in the older countries to establish municipal abattoirs, where meat is killed under the supervision of ap-

The municipal abattoir also gives great advantages with regard to economy in operation and efficiency of supervision. Under ordinary conditions of the primitive slaughterhouse much valuable material is thrown away and wasted. This can be manufactured into valuable products and in a large establishment the manufacture of fertilizer, of special grease, bone meal and other products, produces a valuable part of the revenue.



CIVIC ABATTOIR, TORONTO.

pointed officers, and in many cases these municipal abattoirs have been in successful operation for a great number of years.

In addition to the protection of the public health against disease there are several minor advantages resulting from municipal abattoirs that deserve consideration. Cleanliness is highly desirable with regard to a food product as easily contaminated as meat, and this can only be attained where the necessary facilities are provided,—an ample water supply, good drainage, proper construction of floors and walls, screening of openings against the entrance of flies.

Supervision is also much more easily provided where the slaughtering of animals for a community is done under one roof rather than in many widely scattered establishments. The concentration of the work and its performance at certain hours renders supervision an easy matter.

An improvement may also be expected in the quality of meat prepared at a public abattoir. Butchers will be more careful in their purchases when they know that their meat is to be inspected and condemned if found unwholesome.

There is also a great advantage in the facilities provided for chilling

and cooling meat in a large abattoir. These facilities are generally absent in small slaughterhouses and the fresh killed meat is often carted through dusty streets to the butcher's establishment before it is cooled. Proper cooling of meat soon after killing adds to its quality and wholesomeness.

The experience of the Health of Animals Branch in the inspection of meats at the abattoirs under federal

totally condemned, there were the following number of portions of carcasses condemned:—

119,742	portions of beef.
521,097	“ “ pork.
106,274	“ “ mutton.

It would be safe to assume that if this meat had not been inspected, some of it at least would have found its way into the stores and been sold for food. The temptation to the butcher to trim off diseased portions



CIVIC ABATTOIR. INTERIOR SHOWING COOLERS ON LEFT, KILLING FLOOR ON RIGHT.

supervision, shows conclusively the great importance of this service. Probably about one-half of the meat consumed in Canada is subject to this inspection. During the year ending 31st of March, 1914, this inspection was given to 531,994 cattle, 1,799,000 swine, 499,000 sheep, and of this number there were condemned 7,177 carcasses of cattle, 4,007 carcasses of pork, 399 carcasses of mutton.

In addition to these carcasses

and sell the rest of the carcass is very great, and it is only by strictest supervision that this can be prevented.

Besides actual disease there are many conditions which render meat unwholesome, one of the chief of which is immaturity. Farmers and others endeavour to sell calves for veal before they have become sufficiently mature to furnish wholesome food. Over 3,000 of these

calves were condemned last year by our inspectors and undoubtedly the majority of them would, under other conditions, have found their way into the food supply.

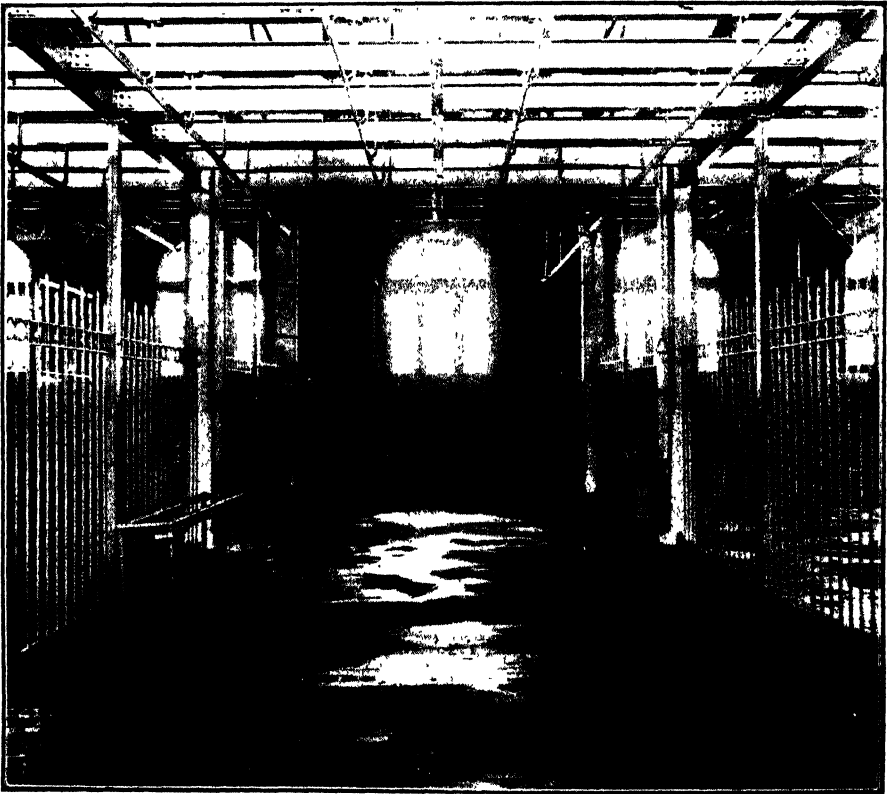
The expense of establishing a municipal abattoir is not so great as to over-ride its manifold advantages. No city with efficient government should be without its civic abattoir. The investment should be looked upon from the same point of view as

deficit. The revenue is derived as follows:—

(1) The fees paid by the butchers for the use of the facilities of the abattoir.

(2) The fees derived from the slaughter of animals by the employees of the abattoir for persons bringing live animals there for that purpose.

(3) The profit to be derived from



CIVIC ABATTOIR. INTERIOR OF ONE OF THE PRIVATE KILLING FLOORS.

the money spent in providing pure water for the use of the citizens.

If the abattoir is self-supporting, so much the better; if not, the deficit may be looked upon as the price the citizens have to pay for protection against impure food and money well spent. Wherever an abattoir is well planned and well managed, it should produce a revenue rather than a

the rendering works in connection with the abattoir.

(4) The rentals derived from the cold storage branch of the establishment.

These sources of revenue should go far towards paying all the operating and other expenses of a municipal abattoir, and where properly situated and efficiently managed

should show a profit on the investment.

It is difficult to point to the experience of other places in Canada or the United States along this line of civic activity, for the reason that up to the present time comparatively few municipal abattoirs have been established in America. Comparisons might be made with municipal abattoirs in England, Germany, France and other countries, where they have been operating for many

McCuiston, Mayor of Paris, Texas, stated, with respect to the municipal abattoir in his city:—

“The City of Paris began the operation of a municipal abattoir on the first day of December, 1909, and we are delighted both with the service rendered and the plan which we are pursuing. Our plant consists of an abattoir and cold storage house, which in height is two stories, also a reduction plant, which is operated with the same machinery and under the same roof, but in different departments.

“We have never undertaken any enterprise which has commended itself to our



CIVIC ABATTOIR. INTERIOR OF PRIVATE KILLING FLOOR SHOWING DRESSED CARCASSES. FEDERAL MEAT INSPECTOR IN WHITE COAT.

years and giving great satisfaction to the people.

Conditions in America, however, are very different to those in Europe, and such comparison would be of little value in guiding Canadians as to what is needed under the conditions of our country.

As an indication, however, of satisfactory operation of a plant on a small scale the experience of Paris, Texas, may be cited:—

In February of 1910, Mr. Ed. H.

people as strongly as our abattoir and reduction plant. When we undertook to vote bonds for it there was quite a good deal of opposition among all our people. Both the plant and the plan were considered impractical and visionary, but there is not now, so far as I have been able to hear since we began operations, a single dissenting voice, and our people appreciate it more than any improvement we have ever undertaken.”

After making the above statement and after two years' of operation, Mayor McCuiston, says:—

“Our municipal abattoir continues to be

the same howling success as it was the day we started it. It has grown in popularity with our people and in favour with our meat cutters with every passing month."

Toronto is the first Canadian city to establish a civic abattoir. This was put in operation in July, 1914. Statistics are not available, showing the expenses of maintaining it, but the manager assured the writer last summer that the amount of business which they were doing was sufficient to warrant the statement that the abattoir would be a paying proposition much sooner than had been expected. This coming so soon after the inauguration of the establishment is highly satisfactory. If events justify this statement Toronto will set an example to other Canadian cities which they should follow as soon as possible.

Toronto applied for federal inspection and this was granted, so that the establishment has been under the inspection of the Health of Animals Branch since its inception.

Under the Meat and Canned Foods Act the Federal Government will

furnish inspection to all abattoirs slaughtering meat for export from one province to another, or to foreign countries, and almost any civic abattoir will be able to take advantage of this provision of the law, provided the business transacted is of sufficient volume to warrant the expenditure. This would relieve the city of the expense of meat inspection and would also provide that civic inspection would be uniform with federal inspection.

Another advantage is attained in that Federal Inspection includes not only the meats intended for export, but every food product prepared in the establishment under inspection. The premises are required to conform to a certain standard of construction and to be maintained in a cleanly, sanitary condition. All animals slaughtered in it are examined both before and after death, and nothing is allowed to go out for human consumption without the mark "Canada Approved," showing that it is clean and wholesome.

EMBARGO AGAINST FOOT AND MOUTH DISEASE.

THE original embargo of November 9th, 1914, prohibited the importation into Canada of "animals, or of the flesh, hides, wool, hoofs, horns, or other parts of animals, (with the exception of cured meats, lard and tallow), or of hay, straw, fodder or manure." Subsequent orders have modified this regulation in several particulars, and for the information of the public, the following synopsis has been prepared:—

Cattle, sheep, goats and swine are still prohibited.

Horses for special use in breeding, racing, or under exceptional circumstances may be admitted by order of the Veterinary Director General, to whom all applications

must be made.

Dogs may be admitted, with the exception of such breeds as are used in hunting, shooting, or herding sheep or cattle.

Poultry. Only live pure bred poultry for breeding purposes may be admitted. The shipment must be accompanied by the affidavit of the owner or shipper that the said poultry have come from an establishment where no cattle, sheep or swine are kept, and from a district not included in the closed area under Federal Quarantine. Crates containing poultry must not contain either hay, straw or chaff.

Wool and hides. Certain classes of wool and hides are admitted under special conditions. Importers can

obtain full information by writing to the Veterinary Director General.

Hay and straw are excluded, with the exception of what is used in packing fragile merchandise. In case this is from the United States an affidavit must accompany the shipment that the said hay or straw was harvested prior to August 1st, 1914, and has not been in contact with any infected animal or material.

Milk and cream are prohibited, unless accompanied by a certificate of pasteurization signed by an officer

of the Bureau of Animal Industry or by a local health officer. Milk cans returning empty to Canada from the United States must be sterilized.

The following are admitted without restriction :— *Horse-hair* for brush and mattress making, *feathers* for bedding manufacturers, *cooked meats* such as sausages, *skins of wild fur-bearing animals*, *pet birds*, *live pigeons*, *menagerie* and *wild animals except deer, pet cats*.

Manure is prohibited.

THE DAIRY AND COLD STORAGE BRANCH.

HOW THE QUESTION OF PAYMENT FOR CHEESE MILK WAS SETTLED AT THE FINCH DAIRY STATION.

THE matter of deciding as to the plan to be followed in distributing the proceeds from the sale of cheese at the Finch Dairy Station was one of the practical problems which the management of that establishment has had to deal with. Up to the time when the business was acquired by the department, the milk had always been "pooled," or in other words, payment to individual patrons had been based only on the weight of the milk delivered. The officers of the Dairy Division have always advocated the payment for cheese milk on a quality basis, and for the sake of consistency, if for no other reason, they were bound to introduce the more up-to-date method at Finch. The question was submitted to the patrons at a meeting called for the purpose, and a majority decided in favour of payment according to the percentage of fat plus 2, which plan was adopted for the season of 1913. Some of the patrons, whose milk tested below the average, became dissatisfied with the results, and in the spring of 1914 a demand was made by about half of them for

a return to the old system. It was intimated that if the demand was not acceded to, a large number of the patrons would leave the factory. On the other hand, those patrons who were in favour of "paying by test" were just as insistent that that system should be continued. What was to be done? The Dairy Division was bound to favour the just and progressive method, and yet one of the objects aimed at in operating the factory was to show that increased patronage would follow good business management. Finally, the following plan was adopted to meet the situation arising over the difference of opinion among the patrons on this question. It was agreed to operate the factory on both systems, giving the patrons the choice of having their milk pooled, or paid for on a quality basis, the two lots of milk to be manufactured separately, just as though there were two distinct factories. When the day arrived on which the new arrangement was to be inaugurated, not a single patron offered his milk at the "pooling" delivery, every one preferring to take chances with the

system of payment according to quality. Not a word has been heard on the subject since. Those patrons who find their milk testing below the average, are now wisely considering means to breed a little more fat into it, and there is no doubt they will be able to do so.

PROSECUTIONS UNDER THE DAIRY INDUSTRY ACT, 1914.

A butter dealer of Montreal was convicted in December for selling

butter containing over the legal limit of 16 per cent of water. The same dealer has recently been convicted under Section 5 of the Act for deliberately mixing water with butter. The minimum fine of \$200.00 and costs was imposed. The fines and costs of both cases amounted to \$487.45. The Chief Inspector of Dairy Products, Mr. J. F. Singleton, was the prosecutor. It is becoming rather a dangerous business, under the new Dairy Act, to attempt this form of fraud.

Down through the centuries has come the widening reign of liberty and law, and however bitter the cost, and however long the struggle, there is no man in this room that can doubt the final result. We have sent and are sending our sons and brothers, but we cannot all be in that fierce battle line. It remains for us, who are left behind, to broaden our sympathies, to bear each other's burdens, and to direct our efforts to sustain those who are bearing the brunt of the fight. We cannot do it better than by ensuring a full measure of the necessities of life to those who are in the front. It is our duty, not less than Britain's, to see that not a sailor in the fleet or a man in the trenches shall lack a single one of those things which he so sorely needs. Russia, that great producing country, must necessarily yield less with its millions drafted to the war; Belgium as a producing factor is obliterated from the map; Britain, always unable to sustain itself, will have stronger needs; that beautiful section of France, where a little more than a year ago I saw the countless shocks of golden grain, is now scarred with deep dug trenches. Surely, surely, there is need for all we can do. On the lower grounds, I urge again, that it will pay the producers of this country to extend their work, but on the higher grounds I make the still stronger appeal that, even if it were an open question as to whether a man by producing more from his farm could make a profit thereby or not, yet if there be the faintest doubt as to an ample food supply for those millions who are heroically doing our work, then in Heaven's name, let us remove the doubt and do our full share in retaining for ourselves and our children the institutions, liberties and civilization whose blessings we share to-day.—*Hon. Martin Burrell, at Agriculture and Live Stock Banquet.*

OBITUARY.

As THE AGRICULTURAL GAZETTE was going to press word was received of the death in St. Catharines, on Tuesday, February 9th, of Mr. Robert Thompson, President of the Ontario Fruit Growers' Association and Manager of the St. Catharines Cold Storage and Forwarding Company.

PART II.

Provincial Departments of Agriculture.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE INCLUDING
AGRICULTURAL COLLEGES.

CORN GROWING.

PRINCE EDWARD ISLAND.

BY W. DAVISON, B.S.A., INSTRUCTOR IN FIELD HUSBANDRY.

OWING to a cool, late summer corn does not often mature on Prince Edward Island.

Mr. Frank Glydon of Margate, who has been growing corn for the last eighteen years, has had better success in maturing seed than any other man in the province. He has ripened seed for a number of seasons, but has met with several failures, notably in the season of 1913. On the whole however, no seed corn of any consequence is saved here.

Mr. J. A. Clark has been testing varieties on the Experimental Farm for the last five years. In these tests Longfellow and Compton's Early have stood out well, but definite conclusions can hardly be drawn as yet.

While it is difficult to mature seed, corn can be grown for ensilage purposes with a good deal of success. Those men who grow this crop can harvest from fifteen to twenty tons of ensilage per acre in a good season and would not be without it. Longfellow is the variety used almost altogether and seems to give the best results.

To get good results, it is necessary to grow corn on sod land, preferably where a good deal of growth can be turned down. This in rotting seems to give heat to the soil which is otherwise lacking and which is so essential to the rapid growth of the crop.

NOVA SCOTIA.

BY JOHN M. TRUEMAN, B.S.A., PROFESSOR OF AGRICULTURE, AGRICULTURAL COLLEGE, TRURO, N.S.

ALMOST every market gardener in Nova Scotia grows with success the common Canada yellow or one of the sweet varieties of corn for domestic purposes. These varieties are, how-

ever, too small for ensilage purposes.

Corn has been grown for ensilage on the College Farm at Truro for over twenty years, but at the end of this period we would hesitate to recommend farmers throughout the

greater part of the province to build silos and grow ensilage corn. The seasons are generally too short. Looking over our results for a period of over two decades, I find that only the ears of such varieties as the Compton's Early or Longfellow reached the glazed stage only about one year in four.

The best success has been obtained with the flint varieties such as Compton's Early and Longfellow, but so frequently have these comparatively early sorts failed to come to maturity that, for a number of years, the farm manager has made a practice of planting from one-third to one-half of the acres grown with the common Canada yellow. The mixture of this well matured corn with the larger growing but less matured varieties has proven very satisfactory. The average yield, however, has only been about 12 tons per acre, the Compton's Early and Longfellow giving about 15 tons and the Canada yellow 8 to 10 tons.

In the Annapolis Valley and in some of the counties along the south shore of Nova Scotia very much better results have been secured than at Truro and in the eastern parts of the province. In the more southern parts of the province, the season is longer and fall frosts are often delayed a month or more after they have destroyed the corn of the East and North. In those parts of the province corn for ensilage purposes is grown in larger quantities each year and should be increased at a much faster rate.

Last summer a farmer in the vicinity of the Agricultural College grew White Cap Yellow Dent from seed which he secured from J. O. Duke, of Ruthven, Ont., and we were quite surprised to see a little larger growth and more maturity than in the flint varieties which were grown on the College Farm. It is our intention to grow some of this variety next year.

For several years, we have made

the attempt to grow our own seed corn and so aim to breed up an acclimated variety. Unfortunately frosts have regularly interfered with the progress of this work.

Recognizing the uncertainty of the corn crop for ensilage purposes, we grew last year on the College Farm some five acres of peas, oats and vetches, which was cut and put into the silo. This crop yielded at the rate of about 11 tons per acre and contained when put into the silo 23.2 per cent of dry matter, in comparison with 13 per cent of dry matter in an adjoining field of corn, which yielded at the rate of about 8 tons per acre. The labour expended upon this crop was less than half that spent on the corn and the ensilage produced is now being fed most satisfactorily. At the present time we are of the opinion that this crop will prove possibly the most valuable ensilage crop which can be grown in the eastern and northern parts of the province of Nova Scotia.

The complete analysis of the silage from the oats, peas and vetch, and from the corn is given below:—

ANALYSIS OF SILAGE.

	Oat, Pea and Vetch Silage.	Corn Silage.
Water.....	71 85	80 00
Protein.....	2 31	2 37
Carbo-hydrates.	23 42	15 33
Fat.....	.83	.88
Ash.....	1 59	1 42
	<hr/> 100.00	<hr/> 100.00

It will be seen from this analysis that the oat, pea and vetch silage contains 26.56 per cent of total nutrients, while the corn silage only contains 18.58 per cent. The yield of dry matter per acre was 6,193 pounds on the oats, peas, and vetch, and 3,200 pounds in the corn silage. It is true that this was a poor corn year but it shows the condition in this section about three years out of four.

The protein in the oats and peas

is not any higher than in the corn. which is surprising at the first glance. It will be noted, however, that the corn was very green and evidently contained more nitrogen than would be the case for mature corn. This would be partly amide nitrogen and not as valuable as that in the mature crop. The protein in mature corn silage is about 1.4 per cent. It would seem, therefore, that the oats and peas are more valuable for this section than corn.

It is very discouraging to see corn cut back by frost in August, as hap-

pened in the summer of 1913. In 1914 the frost did not come too early, but the season was so cold during May and June the corn did not grow fast enough. In fact the nights were too cool all summer for growing corn. The land was not ready for seed and the corn not planted until June 3rd. Frost did no damage until September 7th, and the corn was not harvested until October 7th and 8th. Even then very little of it had even commenced to blossom. This may be taken as a fair example of at the least, a third of our seasons.

NEW BRUNSWICK.

BY R. NEWTON, B.S.A., DIRECTOR OF AGRICULTURAL EDUCATION.

ALTHOUGH corn has been grown in New Brunswick since historical times, the varieties in use have been mostly small-growing, early-maturing flints, such as New Brunswick Yellow, Canada Yellow, and Squaw Corn, which are cultivated chiefly for their grain. The introduction of larger growing varieties for fodder is a comparatively recent event, and the probabilities are that fodder corn will never become as popular or widely grown as it is in Quebec and Ontario. Our soil and climate are particularly favourable for root growing, while our seasons, except in certain sections, cannot be depended upon every year to ripen the heavy yielding varieties of corn sufficiently to make first quality ensilage.

CO-OPERATIVE EXPERIMENTS.

In the spring of 1914, the Department of Agriculture began some experimental work, in co-operation with a large number of farmers in every part of the province, with a view to finding out the possibilities for growing fodder corn. Each farmer undertaking the work was

supplied with the necessary seed, a sheet of cultural directions, and question blanks for his report. The varieties used were Wisconsin No. 7, Wisconsin No. 12 (Golden Glow), and Longfellow.

Over fifty farmers reported in the fall, and their results taken collectively are quite suggestive. The Wisconsin No. 7, as we had expected, proved too late for our conditions; in no case did the ears pass the milk stage. The Golden Glow, an early dent variety, is more promising, though its ears did not pass the dough stage except in a few cases; its average height was about seven feet. The Longfellow this year did not appear to be noticeably earlier than the Golden Glow, while its average height was about six feet.

The work will be continued in 1915 with Golden Glow, Longfellow, Compton's Early, North Dakota, Quebec Yellow, and various strains of New Brunswick Yellow. It may be that the division of the farmer's corn acreage between a large-growing variety, like Golden Glow, and an early, heavy grain producing variety, like Quebec Yellow, to bring up the quality of the ensilage, will

prove a profitable system of fodder production.

Our results this year, however, suggest that fodder corn in New Brunswick will have its greatest use

as a green crop for fall feeding, and that, in most localities, as a main fodder crop it will hardly compete successfully with roots.

MACDONALD COLLEGE.

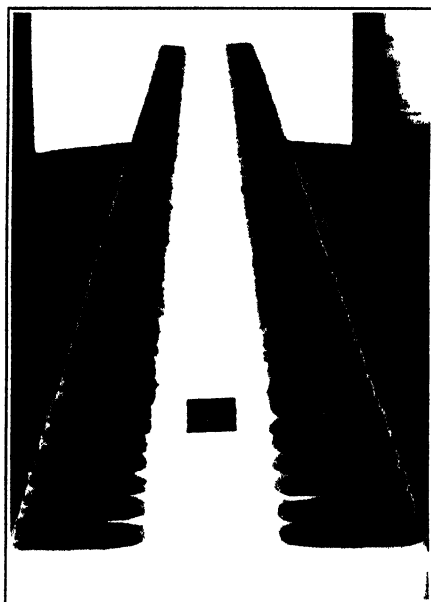
BY R. SUMMERBY, B.S.A., LECTURER IN CEREAL HUSBANDRY.

IN the spring of 1907 Prof. L. S. Klinck, then Professor of Cereal Husbandry at Macdonald College, started work with a view to obtaining a variety or strain of corn that could be relied upon to produce a high yield of grain and mature it properly under Quebec conditions. With this in mind a variety called Quebec Yellow, which was originally obtained from Mr. B. E. Reid of Ulverton, Quebec, was chosen as the variety most suitable for breeding and improvement work along these lines. It showed evidences of good breeding, and in preliminary tests had given high yields of grain of good quality.

The system of improvement adopted is one known as the "ear row" system. By this method the value of an ear is judged by its progeny. From each ear one hundred hills are planted; fifty hills to a row in duplicate in different sections of the field, with rows and hills three feet apart. Every fifth row is planted with a composite sample of seed to act as a check. At harvesting time careful notes are taken on these rows with regard to stand, barren stalks, broken stalks, smutted ears, leafiness, maturity, character and yield of ears. On this basis the inferior strains are discarded.

From 1,188 hills of foundation material set out in 1906 twenty-five ears representing as many strains were selected and put into the ear row test in 1907. Since then the best strains have been represented each year by thirty-two ears in the "ear row" tests. Sixteen of the original

twenty-five strains were discarded in 1907 and five more in 1908, leaving only four strains named, Nos. 23, 25, 28 and 29, on trial. At the end of 1912, strain 28 had outyielded the others by from one to four bushels per acre, giving 85.13 bushels per



A UNIFORM SELECTION OF QUEBEC NO. 28 CORN.

This corn is of the 1913 crop and is selected for distribution throughout the province.

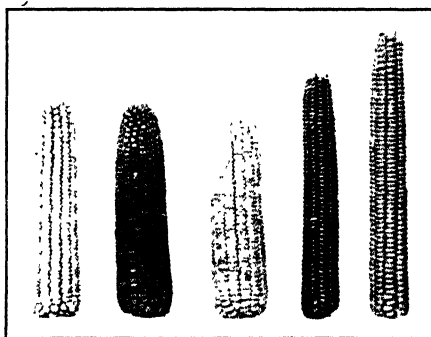
acre as an average for four years in the test as compared with 84.09, 81.49, and 81.39 bushels for strains Nos. 23, 25 and 29 respectively. Strains Nos. 25 and 29 have been discarded, leaving only the highest yielding strains Nos. 23 and 28.

The inferior strains have thus been eliminated and the very best ones isolated as soon as possible without running a risk of too close inbreeding. Strain 28 is considered to be the best of the two remaining ones and has continued to produce well. It matures early and in 1914, in spite of extraordinary trying conditions, yielded 52.5 bushels per acre in a field block. A few bushels of this corn has been sent out to growers through the Canadian Seed Growers' Association and has been registered as Quebec No. 28. A considerable quantity will also be available for sending out for 1915 planting.

VARIETIES OF CORN FOR ENSILAGE IN QUEBEC.

On account of the shortness of the growing season and the frequent occurrence of early fall frosts Quebec requires a corn that reaches the glazing stage on or before the fifteenth of September. Growers in the past have been inclined to place too much importance on yield, rather than on yield and quality combined, and as a result have been growing the large growing, late maturing varieties such as Red Cob Mastodon and Reids Yellow Dent. These varieties along with late strains of Leaming White Cap Yellow Dent are not suitable for growing in Quebec, in that, although they produce a high yield, they furnish a poor quality of ensilage. Varieties that may be recommended are Early Leaming, Early White Cap, Wisconsin No. 7 and Howie among the dents, and North Dakota, Long-

fellow and King Phillip among the flints. The Leaming and White Cap varieties have a great deal of range within the variety, some strains being early and some late in maturing. For this reason these varieties do not give uniformly satisfactory results unless special precautions are taken to get an early strain. The other varieties mentioned as being desirable are free from this fault and can be depended upon to give a good yield of corn of good quality every year.



Good Varieties of Ensilage Corn for Quebec.

Left to right: Early White Cap, Early Leaming, Wisconsin No. 7, King Phillip, and North Dakota.

Corn of good quality for ensilage cannot be produced when plants are closer than 8 to 10 inches apart in the row with rows 3 feet apart. Planting in hills 42 inches apart each way with three to five plants per hill is, however, the method of planting recommended in that a good yield of a high quality of ensilage is produced at a minimum cost for cultivation.

ONTARIO.

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE.

IN this province a great deal of attention has been devoted to the corn growing industry. About seven or eight years ago, shortly after a district repre-

sentative had been appointed for Essex county, he took up the matter of improving the corn industry, which constitutes such an important part of agriculture in that section.

In order to accomplish this, he succeeded in organizing an association known as the Ontario Corn Growers' Association. The benefits of this organization have been very conspicuous and have been along two lines. In the first place it has resulted in a vast improvement in the quality of the corn grown for seed purposes in that section, and in the second place it has resulted in the extension of the use of home grown seed in various other parts of the province. The association holds an annual exhibition, and it is a notable fact that the quality as well as the number of exhibits have grown rapidly from year to year.

Aside from this, two other shows have since been organized, and the original parent organization now only serves the two counties of Essex and Kent. An independent association was organized in Elgin county and holds an exhibition at West Lorne, as certain sections of Elgin are splendidly adapted to the corn growing industry and are producing large quantities of high quality.

Then, too, there has been an organization formed in Lambton county, and this organization last year held its first show at Petrolia, and is following it up with another show during the present winter. As an indication of the great interest which is taken in corn growing in Lambton county, it may be pointed out that last year the Honourable W. J. Hanna offered a handsome trophy for the best five acre field of corn, and for this trophy there were 165 entries.

All these associations receive grants and other assistance from the Ontario Department of Agriculture.

In connection with the extension of markets for seed corn, exhibits have also been made, especially by Essex and Kent, and to some extent by Lambton, at the Toronto Exhibition and at the Guelph Winter Fair. In this way an effort has been made

to get in touch with the ensilage growers in other sections of the province, and there is no doubt but that a large number of farmers are now using home grown seed where they formerly imported seed from across the line. Every effort is being made to keep up the quality, and a few co-operative associations have been organized with this end in view. Prices have ranged from \$1.00 to \$3.00 per bushel.

STANDARDIZED VARIETIES.

The associations have taken up the matter of standardizing varieties and seven varieties have been adopted as follows:—

DENTS.	FLINTS.
Wisconsin No. 7.	Longfellow.
Golden Glow.	Compton's Early.
Whitecap Yellow	Salzer's North
Dent.	Dakota.
Bailey.	

These seven varieties it has been felt are best adapted to this province, and every effort is being made to secure as great uniformity as possible.

While considerable progress has been made, it has been felt that there is still a great deal to be done both in standardizing varieties and in securing the highest percentage of germination. In this connection an important line of experiments was begun last year by the Department of Agriculture through the district representatives, who, of course, have taken a great interest in the corn industry and have been very influential in assisting in the marketing of home grown seed and extending the popularity of ensilage. While it is recognized that the seven varieties named are the best for Ontario, it is equally true that certain varieties are more suitable to certain sections of the province than other varieties. Hence, it was decided to have each district representative secure the co-operation of local farmers in setting aside one acre on eight different farms. On each acre the

seven varieties will be grown and in this way there will be a splendid opportunity to judge which variety is most suitable to that district by keeping note of the freedom from disease, the development of the ears and the yield. This work was carried out in eight counties last season, and its success has been such as to warrant its adoption in practically all the counties in which there are district representatives. It is proposed to continue the test for three successive years under similar circumstances so that at the end of that time there will be a well established decision in favour of the best varieties.

In addition to this, experimental work is, of course, carried on under Prof. Zavitz on the experimental plots at the Ontario Agricultural College and in connection with the Experimental Union.

As for sweet corn, the Golden Bantam variety has been growing very rapidly in popularity during recent years as the result of tests which have shown it to be the best variety of early eating corn. Stowell's Evergreen is the late variety, but through the distribution of seed to rural school children for contests at their fairs and through the efforts of the district representatives, Golden Bantam has been very generally adopted throughout the province.

That ensilage is growing more and more popular with the farmer as a first class feed is indicated by the increasing number of silos all over the province. Statistics show that in 1913, 388,138 acres were devoted to corn for silo, as compared with an average of 236,230 for the ten year period.

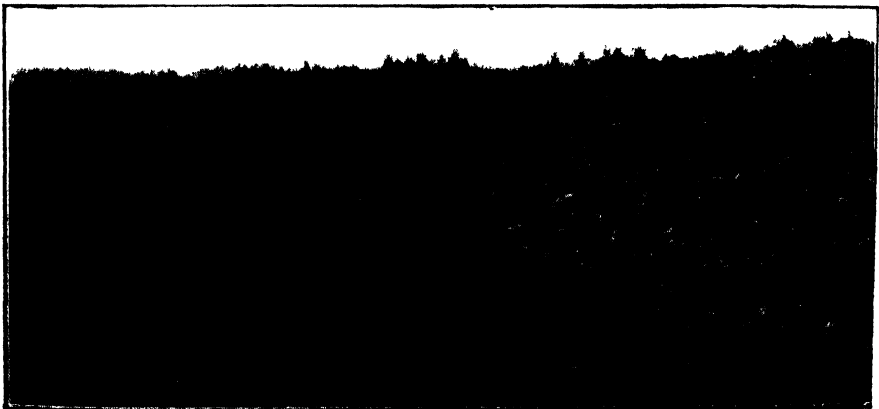
MANITOBA.

BY PROF. S. A. BEDFORD, DEPUTY MINISTER OF AGRICULTURE.

VERY little corn of any kind, except the native Squaw corn, was grown in Manitoba previous to the establishment of the Experimental Farm at Brandon in 1888. Since that

time, however, many varieties have been tested for fodder and for grain, and it has been demonstrated convincingly that corn can be grown with great success in this province.

The Experimental Farm at Bran-



FODDER CORN AT THE EXPERIMENTAL FARM, BRANDON, MANITOBA.

This Corn is of the North Dakota Flint Variety.

don and the Manitoba Agricultural College have played a big part in giving corn a Manitoba status and each year sees still further experiments with this important fodder. In addition to these official activities

only persons who have done this, so far as I know.

FODDER VARIETIES.

We have found from tests that among the most suitable varieties

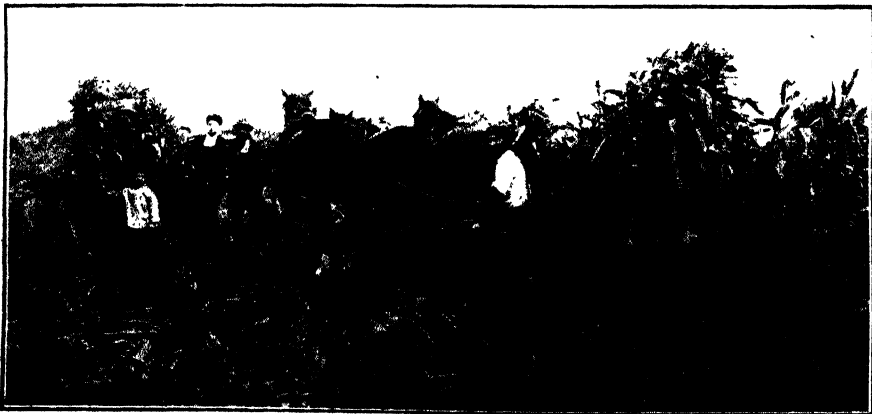


FODDER CORN AT THE MANITOBA AGRICULTURAL COLLEGE.

This Corn is of the Longfellow Variety and Grew 10 to 12 Feet High.

Messrs. Walter James & Sons, of Rosser, Manitoba, and Mr. Gordon McLaren, of Pipestone, Manitoba, have made crosses with varieties, comparison of yields, etc., with husking varieties. They are the

for fodder purposes the *Longfellow* does well at an altitude of 700 feet to 800 feet above sea level. It varies in height between six and ten feet, has abundance of foliage and usually reaches the early milk stage at the



ENSILAGE CORN IN MANITOBA.

This corn was grown for fodder purposes and some of it was 10 feet high.

altitude given.

North-Western Dent is another favourite. While it is somewhat shorter than the first-mentioned variety and has less foliage, it is considerably earlier, usually reaching the late milk stage in the Red River Valley and occasionally ripening. It is also well adapted for the higher altitudes.



ENSILAGE CORN IN MANITOBA.

Photo taken August 25th, 1913, in a seventy-acre field of corn on the Emmert Estate, East Selkirk.

North Dakota Flint is a third variety which is largely grown in this province. Though not quite as tall as the *Longfellow* it has the same abundance of foliage with the advantage of ripening about the same time as the *North-Western Dent* or very little later.

There are a number of other varieties of fodder corn which are grown in Manitoba in small quantities.

HUSKING VARIETIES.

Native or *Squaw Corn*, grown by the Indians prior to the advent of the white man, is said to have been brought in by them from the Mandan tribe living on the Missouri River near the present site of Bismark, North Dakota. The Mandans are known to have traded with the Indians of the north. This corn is from 3 to 5 feet high, has small ears and the grain varies in colour from pure white to very dark purple. It is the earliest variety known here; but while it will ripen every year if sown during May, the yield of grain is small and it is not desirable for table use.

Gehu Yellow Flint is a very promising kind for husking. It is extremely early and is probably a selection from the *Native Squaw*, though it has longer and larger ears and reaches a height of from 5 to 7 feet.

Free Press, another yellow flint, is usually even a little earlier than the *Gehu* and has a very similar appearance.

Quebec or *Canada Yellow* grows ears from 8 to 10 inches long, borne on a stalk from 5 to 7 feet in height. It is somewhat later than the other two, *Gehu* and *Free Press*.

These varieties constitute almost the only husking corn grown in Manitoba, the total area devoted to this purpose being quite small.

SASKATCHEWAN.

BY JOHN BRACKEN, B.S.A., PROFESSOR OF CEREAL HUSBANDRY, COLLEGE OF AGRICULTURE, SASKATOON.

TO secure improved varieties of corn, this department has been testing the commonly recommended sorts in order to find out those best suited for

forage or combined grain and forage, and those that promise most in the hands of the breeder for combined grain and forage or for grain alone. In 1911 thirty-two sorts were grown,

in 1912 twenty-one, in 1913 thirty-eight, and in 1914 eighteen were tested out in our trial grounds here.

Among other things, these trials have shown:—

(1) That the large late maturing southern sorts, produce the largest yield for forage but the poorest quality, and no grain.

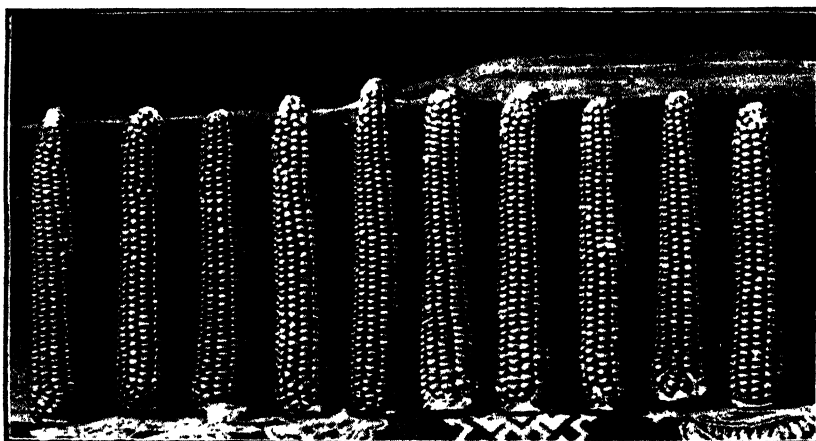
(2) That the short early maturing native, or improved native sorts are the only ones that can be matured sufficiently for seed in Saskatoon, in an average season.

(3) It would seem also, from these tests, that where forage alone is

Dents, Longfellow, Compton's Early, Leaming, Quebec Yellow and North Western Dent, are among the best.

None have proven suitable for husking purposes; in fact none except some of the native sorts have matured grain and the yield from these has been so small that we cannot recommend them for grain production. Improved Squaw, Free Press, Dakota White Flint, Gheu, promise to be useful in the warmer parts for grain and forage where hogs and cattle can be used to harvest the crop.

The practice of growing corn and



EARS OF CORN GROWN UNDER FIELD CONDITIONS BY GEORGE LARKER, TROSSACHS, SASK.

desired the earliest maturing of the taller growing sorts, should be used for the reason that the dry matter content is much greater in the plants that approach maturity than in those that are later, and,

(4) Seeding in rows, providing the land is relatively clean produces larger yields of forage than planting in check rows.

The varieties we have found most suitable for ensilage are those that combine fairly high yield of forage with earliness. Most of these are flint varieties, but some are Early

“hogging” it off is one that deserves extensive trial in southern Saskatchewan. The relation of corn to the cropping system is a very pertinent question. This year, on the University farm, the yield of wheat after corn was practically as high as that on fallowed land. The whole subject of corn improvement deserves further study, but it would seem from our experience, that the work should be carried out at some point in the southern part of the province, where there is not so much danger from frost.

ALBERTA.

BY W. J. ELLIOT, B.S.A., PRINCIPAL, SCHOOL OF AGRICULTURE, OLDS.

UP to the present very little has been done in the way of experimental work with corn in this vicinity, and the general impression is that corn cannot be grown. However, in connection with the school, we tried some 13 varieties of the Squaw and pop corn varieties during the summer of 1914. The corn grew to approximately 4 feet in height and nubbins were being formed, but the cool weather of the fall checked it so that

we had no matured corn whatever, nor did we secure corn for table use. In the field varieties the Minnesota 13 and the North Western Dent have been tried. We grew field corn to a height of six feet but without any matured cobs. I am inclined to think that the hot, dry weather during the past summer was rather favourable to corn growing, and we are watching to see what the results of next year's experimental work will be.

BRITISH COLUMBIA.

BY J. C. READEY, B.S.A., SOIL AND CROP INSTRUCTOR.

CORN was grown by the Indians and early settlers in this province at least half a century ago. One of the first distributions of seed corn was made by the Hudson's Bay Company on the South Thompson near Kamloops. Potatoes and corn were the staple crops in this district, and early settlers tell us that the corn was very successfully grown. It might be inferred from this statement that British Columbia was a corn-growing province, but such a conclusion would require considerable qualification. In fact, ten miles from where this corn was grown, in which distance there is an increase in altitude of 2,300 feet, corn-growing is yet in a doubtful stage. It is this variation in altitude, and relation to mountains, that causes the difficulties in successful corn-growing in this province. These difficulties are heavy summer precipitation, or, to state it conversely, limited sunlight, on some of the Islands and coast districts, cool nights in the valleys of the mountainous interior, and late spring and early fall frosts at the higher altitudes. Notwithstanding these dif-

ficulties, there is a very large proportion of the arable land of British Columbia that is or will become adapted to the growing of this premier crop. Even in the north country along the line of the Grand Trunk Pacific, the late and early frosts, never very severe, may ultimately disappear with the opening up of the country and corn become a successful crop.

CO-OPERATIVE EXPERIMENTS.

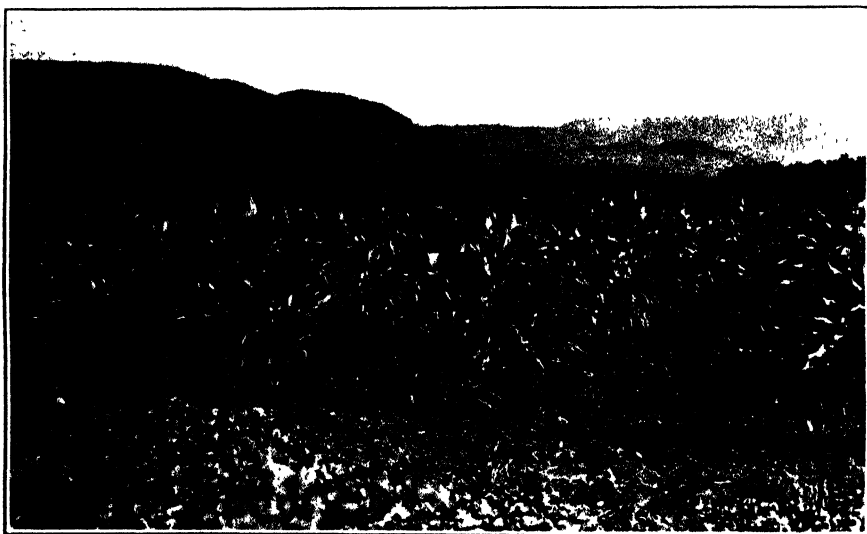
With a view to studying the peculiarities of the various districts with relation to corn growing, the provincial Department of Agriculture undertook to run a series of co-operative tests with corn and alfalfa. Three one-pound packages of corn, representing three distinct varieties, were sent to each co-operator. The varieties used were Minnesota No. 13, Spokane Premium Yellow Dent, White Pride of the North, North Western Dent, and Quebec No. 28. Three hundred and twenty-five tests were made, and reports from one hundred and thirty of these were received by the department. The replies received cover that part of the province south of the

Canadian Pacific Railway and also Vancouver and the Gulf Island. The reports have exceeded the expectation of the department, and indicate that corn may be grown more successfully even than was anticipated, and that districts that were regarded as very doubtful give fair promise. The past season, however, was rather unusually dry and hot; a circumstance in favour of the corn. On the other hand, the Minnesota No. 13, Windus, Spokane Premium White Dent and White Pride of the North were procured from rather low elevations in Washington, U.S.A., the North Western

variety in the province during 1914.

Arrangements are being made for further co-operative tests during 1915 with the three varieties that gave best results last year, and it is expected that the work will be continued until dependable results have been secured.

A most gratifying feature of the work has been the widespread interest that has been created in this most valuable crop. It is felt by the department that corn has been introduced into many districts years before it otherwise would, and that many ranchers will grow the crop who would have concluded that the



QUEBEC NO. 28 CORN, IN BRITISH COLUMBIA, JULY 17TH, 1914.

Twelve ears from this crop won first prize at the International Irrigation Congress held at Calgary.

Dent from North Dakota, and the Quebec No. 28 from Macdonald College, Que., so that none of the seed could be said to be acclimated to our conditions, and there is hope that the adaptation of varieties will more than offset the slightest advantage of the past season. Minnesota No. 13, North Western Dent, and Quebec No. 28 have given quite the best results, though the latter variety, owing to the limited amount of seed procurable, did not have wide distribution. The department, however, has grown its own seed of this

crop would not "do well with them" had not the test demonstrated the possibilities.

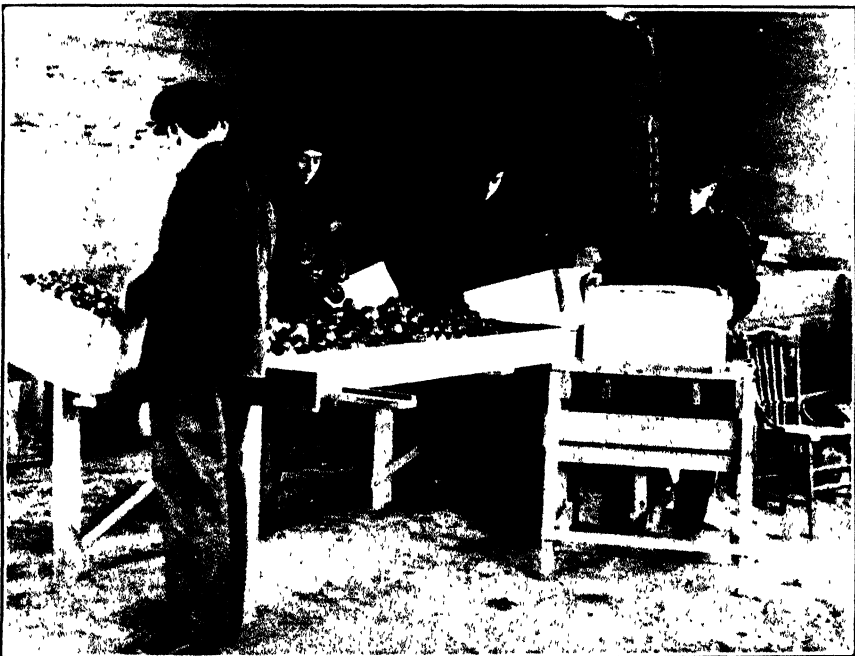
In addition to this co-operative work, the department has leased land for 1915 on which an attempt will be made to produce acclimated seed for 1916. In the meantime, Good Seed Centres will be organized with the local Government Demonstration Plots as the origin of the Elite Seed. In a few years British Columbia will be a corn-growing province, and will be producing her own seed.

PRINCE EDWARD ISLAND.

SHORT COURSES.

THE financial aid received through the Dominion "Agricultural Instruction Act" has enabled the Department of Agriculture of Prince Edward Island to carry on short courses in apple packing at several fruit growing centres in the province. They were held at Georgetown, Montague, Vernon River, and Char-

lottetown. The packing was done in both boxes and barrels. The apples were then marketed, and most of them shipped to Newfoundland. The bulk of the apples were Wealthies. These netted the grower about 70c. a box. The work was in charge of Prof. L. Tennant, and was very popular with those particularly interested.



BOX PACKING OF APPLES.

Instruction Given at Prince Edward Island Long Course in Agriculture, December, 1914

AT the autumn session of the Long Course in Agriculture held in the Agricultural Hall, Charlottetown, Prince Edward Island, a series of lectures was given on the care, cultivation

and management of orchards. The practical work consisted in the grading and packing of apples in boxes and in barrels. They were graded and packed by the students under the supervision of the instructor, and

were properly marked and sold, some in Charlottetown and some in Newfoundland.

Barrel-making also formed part of the practical work. There are very few apple barrel coopers in Prince Edward Island, and the fruit growers

difficulty, as several of the students became sufficiently expert to make apple barrels commercially. The course was in charge of Prof. L. Tennant, who was assisted by Mr. A. E. Dewar, President of the Fruit Growers' Association of Prince Ed-



A CLASS IN BARREL MAKING.

Instruction in the making of apple barrels was given at the Prince Edward Island Long Course in Agriculture, December, 1914.

have had considerable difficulty in securing apple barrels. This course will, however, obviate this

ward Island. It was made possible by the aid received from THE AGRICULTURAL INSTRUCTION ACT.

The Short Courses in Household Economics, under the direction of the Women's Institute Division of the Department of Agriculture,

Prince Edward Island, commenced January 4th and will continue until March 1st, 1915.

NOVA SCOTIA.

A TURNIP GROWING CONTEST.

A PORTION of the grant received by the province of Nova Scotia in 1914, under the provisions of the Agricultural Instruction Act, was used to defray a portion of the expenses in conducting a contest for farmers' boys in the growing of turnips.

The contest was open to boys between the ages of fifteen and twenty years living in the counties of Colchester, Cumberland and Pictou, N.S., whose guardians' assessed valuation of property does not exceed \$3,000.00. The area of turnips to be grown was one acre.

Prizes were given in each county separately. Four prizes of seventy-five, fifty, thirty and twenty dollars were given in each county. The winners were allowed the option for spending the money: (1), In pursuit of an agricultural education; (2), For purchasing improved live stock; (3), For under-draining or otherwise improving his farm; (4), In such other manner as may be agreed upon by the committee in charge of the contest.

The committee consisted of Prof. M. Cumming, Secretary for Agriculture, Charles Hill Onslow and F. L. Fuller, Superintendent of Agricultural Societies, Truro.

In addition to the regular prizes, the provincial Department of Agriculture contributed a prize of \$5 each to the boys whose crops were almost equal to the four prize winners. Thirty boys competed, five in Cumberland, ten in Pictou and fifteen in Colchester. The yields of the first prize winners were as follows:

Cumberland ..	1296 bushels.
Colchester.	1266
Pictou	1245

The contest is to be repeated in 1915.

The average yield of field roots over Canada, according to the Canada Year Book, is about 360 bushels per acre.

THE SHORT COURSE.

BY M. CUMMING, B.A., B.S.A., PRINCIPAL NOVA SCOTIA AGRICULTURAL COLLEGE.

THE short course at the Nova Scotia Agricultural College, held from January 5th to 15th, was successful in every respect. The enrolled attendance in the men's short course was 235, and in the ladies' short course 51, making a total of 286. This is the third largest attendance in the history of the institution and the largest attendance ever recorded from the province of Nova Scotia. At the previous short courses there were always in attendance a large number of students, varying from 100 to 200 from the provinces of New Brunswick and Prince Edward Island but, as these provinces are now holding their own short courses, only a very few attended the Truro short course.

The slogan of the course was "Bigger Crops in 1915." A large banner bearing this sign was hung over the assembly hall, where classes met for a part of the time each day, and all the instruction was directed toward this end.

The outstanding feature of the course was the opportunity given to those who attended to take up almost

any line of study. Optional instruction was given in as many as four or five subjects at one time. In this way the large classes were in many cases reduced to smaller classes and much more effective work done than could be done by giving instruction continuously to classes too large for the attention of the teacher.

In addition to the usual features of stock judging, seed judging, and lectures in soil cultivation, some of the extra features included were a special course in manures and fertilizers, conducted by B. Leslie Emslie, who is at the present time in Nova Scotia in connection with the farmers' conferences for extra crop production, and a course of instruction in gasoline engines. The various gasoline engine firms sent engines to the college and Mr. Douglas, a gasoline engine expert, conducted the practical instruction classes.

Added features were instruction in special lines of dairying, veterinary science, poultry, horticulture, apiculture, entomology, and in fact almost every subject which is taken up in an agricultural college.

On the evening of the 12th of January, the occasion of the opening of the Women's Institutes, a general meeting was held, which was addressed by the Honourable Mr. Murray, Premier of Nova Scotia, Mrs. Laura Rose Stephen, the Mayor of Truro, Principal Cumming, and others. The attendance at this meeting was considerably over 900, and it was generally considered that perhaps no more inspiring meeting had ever been held in the history of the institution.

Altogether the faculty of the College feel that 1915 has been a banner short course year in the history of the institution and, judging from the large number of orders given for improved grain and turnip seed, following the lectures of T. G. Raynor, of the Department of Agriculture, Ottawa, and Paul A. Boving, of Macdonald College, Quebec, considered that greater crops will certainly be grown in 1915.

WOMEN'S INSTITUTES.

BY JENNIE A. FRASER, SUPERINTENDENT OF WOMEN'S INSTITUTES.

NOVA Scotia is the latest province to take up the work of Women's Institutes.

In July, 1913, the first institute was organized in Nova Scotia at Saltsprings in Pictou County. That institute, with seven others organized during the same month, formed the nucleus of the movement until October, 1913, when six more were formed.

The first convention was held in Truro in January, 1914. That was a memorable series of meetings, marked by splendid addresses by Mrs. Laura Rose Stephen of Huntingdon, Que., Dr. Soloan of the Normal College, Truro, Principal Cumming of the Agricultural College and Dr. S. J. Walker of Truro. It was held during the annual short course and thirty delegates attended. Besides the convention meetings they were able to take in several of the short course lectures and demonstrations in domestic science and home nursing.

During 1914, twenty-two institutes were organized, making a total of thirty-six and these institutes are distributed through the various counties as follows:—Pictou, three; Colchester, two; Cumberland, four;

Hants, two; Kings, five; Annapolis, two; Yarmouth, two; Queens, three; Lunenburg, five; Antigonish, five; and Guysboro, three; leaving Halifax and Shelburne counties and Cape Breton Island still unorganized, not for lack of invitation or inclination, but for lack of time.

It has been thought wiser in putting this movement on a working basis in Nova Scotia to have a few institutes organized in each county rather than have two or three counties thoroughly covered. That has been the method adopted so far and it has proven eminently successful and satisfactory.

The second annual convention was held in January, 1915, during the second week of the annual short course. The first convention out-ranked the second one. In 1916 with our new building, there will be no clashing of short course lectures and convention sessions. The addresses at this convention sustained the high standard set at the first convention and were delivered by Honourable J. A. Murray, Premier of Nova Scotia; Mrs. John Stanfield, Truro; Mrs. Laura Rose Stephen, Huntingdon, Que.; Mrs. F. Sexton, Halifax, Principal Cumming; Mr. L. A. De Wolfe and Rev. W. P. Grant, Truro.

There were fifty-one delegates present and about seven visiting members. The reports from the institutes were highly gratifying and the amount of work accomplished for the Red Cross, Belgian Relief and Patriotic Fund both in practical work and in gifts of money was astonishing. Besides their splendid response to these appeals, the institutes have not neglected the calls for aid in their own community. The membership runs between the minimum of fourteen and the maximum of fifty and the majority of institutes runs closer to the maximum. That membership is composed of women of the best fibre in our province,—women whose ideals are high and who stand staunchly for them—women whose desire is to better their homes and community and to respond to the call "For Home and Country" at any moment.

Now just a word as to what the Department of Agriculture has done to help the institutes. At the first convention, a resolution was passed requesting the government of Nova Scotia to consider the advisability of building on the grounds of the Agricultural College, a domestic science school and residence for the girls of the province.

In respect to this appeal there is to be devoted to the interests of women's work in the province, the second floor of the new building

being constructed on the college grounds. This will give the needed opportunity of developing the short courses and of providing adequate accommodation for future conventions.

As announced in the December number of the AGRICULTURAL GAZETTE, the women's institutes have availed themselves of the travelling library of McGill University of Montreal. McGill University paid the transportation charges. The fee for the use of 25 to 30 books for three months was only about three dollars, which was met by the provincial Department of Agriculture. The twelve institutes that have had the use of these books have found them exceedingly helpful.

A demonstrator and lecturer on domestic science were in the field last summer and their efforts met with so much success that this phase of the work will be greatly developed this year, adding, if possible, demonstrators in other lines of homemaking and housekeeping.

That the future of the institutes in Nova Scotia is a bright one is now an assumed fact and as the membership grows in numbers and strength, its influence for good will be felt from one part of Nova Scotia to the other or as could easily be said in our beautiful sea-girt province, "From the centre all round to the sea."

QUEBEC.

AGRICULTURE IN SCHOOLS.

BY JEAN CHARLES MAGNAN, B.S.A., DISTRICT AGRICULTURIST, ST. CASIMIR, QUE.

SCHOOL GARDENS.

THE school garden movement has made marked progress this year in the province of Quebec. The teachers now realize that agriculture must be taught in rural schools. In one of the districts where the department

has a representative (Champlain and Portneuf) there has been a remarkable increase in the number of school gardens. In 1913 there were five schools with gardens in this district; there are now 49, an increase of 44 during the year. This very encouraging result shows that the teaching

of agriculture in rural schools, under the direction of the Quebec Department of Agriculture, is keenly appreciated by the people as well as by the teachers of the province. There were, last year, 234 schools with gardens. The number of children working in these gardens was 7,740. In the counties of Portneuf and Champlain, there were in 1914, 49 schools with gardens, operated by 960 children. In the village of St. Casimir de Portneuf, where a movement for the teaching of practical and theoretical agriculture was started at the College of the Christian

Brothers, a garden school products' exhibit was held on the 14th of Sept. 1914. Over 300 scholars took part in this event. There were over 175 exhibits of vegetables, 75 of domestic work; 65 chickens; 22 sheaves of Banner oats, hand selected by the pupils; 18 plates of fruit; 20 jars of preserves, paintings and other special exhibits. The fair was attended by over 1,600 people.

The programme included practical demonstrations and sports. At the close of the day the pupils sang the national anthem "O Canada" and shouted "Long live agriculture."

MACDONALD COLLEGE.

THE MILK SUPPLY OF MONTREAL.

BY HARRISON, SAVAGE AND SADLER.

REASON OR PROLOGUE.

THE writers have investigated the city's milk from a bacteriological standpoint.

In the form of a Macdonald College bulletin the writers put forth their conclusions and recommendations, resulting from a comprehensive bacteriological study of the subject. The reasons for undertaking an investigation of the city's milk supply are made clear in the early paragraphs where the following, among other statements, are found:—

"The enormous death rate of infants in Montreal due to intestinal disease is in great measure due to improper methods of feeding and to dirty milk."

"Out of every 100 children born in the city of Montreal 32 die before the end of their first year."

"This appalling infantile mortality is only equalled by that of Chili."

This appalling loss of life and of potential worth in the metropolis of Canada is therefore of grave concern to the community, and the examples

quoted show that it may be reduced. For this particular reason and also on account of the well known role that milk plays in the dissemination of typhoid, diphtheria, scarlet fever, tuberculosis, etc., the present investigation was undertaken. The results of these studies are set forth with nothing extenuated nor aught set down in malice.

Through the courtesy of the provincial Board of Health authorities, two of the writers were made milk inspectors *pro tem*, and their labours were rendered much lighter than could have otherwise been the case by the co-operation of the Civic Food Inspection authorities.

A fundamental idea in our method of collecting samples was to have them represent (as far as possible) the milk when removed in the ordinary way from whatever vessel contained it.

The analyses here given show fairly comprehensively the city's milk supply:—

1. As it is produced and shipped.
2. As it arrives in Montreal.

3. During certain processes at wholesale dealers.

4. As retailed.

During the summer of 1913 eleven rural districts supplying the city with milk were visited, and about 250 samples collected from them, while more than 550 were taken in parts of the city.

In the winter of 1913-14 samples were only collected in the city, more than 300 being analysed. These, it should be stated, as in the case of the summer ones, were from street wagons, cafes, bars, restaurants, groceries, hotels of all classes, large dealers, and the many kinds of non-descript places where milk is sold.

LABORATORY METHODS.

From the technical standpoint of a bacteriologist, the methods used in analysing these samples were accurate and complete. All analyses were made in triplicate, the average

being expressed as a final result. Not only were total numbers of organisms counted, but by the use of lactose and litmus in both agar and gelatine plates the acid and liquefying bacteria were differentiated, and as all samples were also plated on *æsculin* agar the colon content (including manurial contamination) was rated. These nine plates were poured off each sample.

MILK STANDARDS.

For ready reference, all samples taken within the city are graded, the standards with certain modifications of the American Commission on Milk Standards, being used. To the grades A, B, and C of the Commission the writers have added a grade D, which is five times worse than grade C, and contains over five million bacteria per cubic centimeter. Such milk, in their estimation, should not be sold for human food.

GRADING OF MILK.

BACTERIAL COUNT PER CUBIC CENTIMETRE.

Grade	Raw.	Before pasteurizing	After pasteurizing	Colon group		Liquefier group		Grade.
				Before pasteurizing	After pasteurizing	Before pasteurizing	After pasteurizing	
A	under 100,000	200,000	10,000	under 500	0	under 2,000	500	A
B	" 1,000,000	1,000,000	50,000	" 5,000	0	" 20,000	5,000	B
C	over 1,000,000	1,000,000	50,000	" 10,000	0	" 100,000	50,000	C
D	" 5,000,000	5,000,000	100,000	over 10,000	0	over 100,000	100,000	D

Regarding the rural samples, the writers show that most farmers produce grade B or C milk, and that this loses one grade during transportation. They also say "too much emphasis cannot be laid upon the fact that the farmer is given no extra remuneration for the care he may exercise to produce clean milk, although practically all farm produce is paid for according to quality, we find that milk is one exception."

Another factor, which however, cannot be discussed at length here, is the relatively small price that the farmer obtains for milk—the increased cost of labour and cattle

feeds has not had its corresponding increase in the price of milk.

The recommendations appended to the report are as follows:—

RECOMMENDATIONS.

In view of our present knowledge of the milk supply of Montreal, we earnestly recommend to those in authority and to the milk-consuming public, that the legal statutes of the province, and the regulations and by-laws of the city of Montreal relative to the sale and distribution of milk be so amended as to include the following points:—

1. The grading of city market milk.
2. Payment for milk according to this grading or scoring.
3. Confiscation of milk as poor in quality as that which we have designated Grade "D."
4. The conferring of such power upon the Chief Food Inspector and his staff as to enable him to—
 - (a) Inspect and maintain at a certain standard all farms shipping milk to Montreal.
 - (b) To issue licenses subject to recall, for the production, handling, sale and delivery of milk consumed in the city to those who satisfy the requirements (and to refuse licenses to others).
 - (c) To fine offenders for violation of regulations.
 - (d) To insist upon the provision of proper equipment in all shops, stores and other places where milk is retailed.
5. The technical examination of men in charge of works where bottling, pasteurization, clarification, cooling, etc., are carried out.
6. The enforcing of pasteurization, i.e., heating milk to a temperature of 145 deg. F. for twenty minutes, followed by subsequent cooling.
7. Frequent visits and tests by the city milk inspectors to enforce proper pasteurization.

8. Systematic publication in the press by the Chief Food Inspector of analyses made of city milk; giving also the names of the vendors from whom samples are taken.

9. The instituting of an educational campaign among consumers; emphasizing the value of milk as a food, the necessity for, and advantages of a pure milk supply, and the duties of the consumer.

10. The general improvements on milk-producing farms, so as to be in keeping with the particulars of our scoring system on page 9.

11. The use of refrigerator or iced cars for transportation.

There are observations on milking machines, the handling of milk by dealers, the conditions under which milk is kept and sold by retailers, transportation, pasteurisation and other notes of interest. At the front of the bulletin is a map of the city showing by means of coloured dots where samples were taken in the summer months.

Copies may be had on application to the Principal, Macdonald College, Que.

SHORT COURSE IN FRUIT GROWING.

A free short course in Fruit Growing and Vegetable Gardening will be held at Macdonald College from February 8th to the 12th inclusive. In this course practical information will be given on fruit growing, vege-

table gardening, market gardening and floriculture.

In addition to the staff of the Horticultural Department of the College, lectures will be given by Mr. W. T. Macoun, Dominion Horticulturist.

NOTE.

With a view to preparing teachers in Model Schools and Rural Concentration Schools in the province of Quebec to teach agriculture, an arrangement has been entered into between Macdonald College and the Protestant committee of Quebec, whereby each student of the first year in agriculture who has passed the school leaving examination has the privilege to study for the model diploma during his course in agricul-

ture. This diploma is granted on completion of two years' training. The course is free to Quebec students only. Students from other provinces of Canada are charged seventy-five dollars and from outside the Dominion one hundred dollars. This fee is returnable if the student has proved satisfactorily that he has taught for a school year in the province of Quebec after receiving a diploma.

ONTARIO.

PROFIT COMPETITIONS.

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE.

OVER seventy young men from Ontario farms have just completed a two weeks' course in Stock and Seed Judging at the Ontario Agricultural College without any expense whatever to themselves as a result of the "Acre Profit" and "Feeding Hogs" Competitions carried on by the Ontario Department of Agriculture during the past season. These competitions were open to boys who had taken the six weeks' short course with district representatives, under whom the contests were conducted.

Below is given the list of winners in the "Acre Profit" competition. In the cost, allowance has been made for rent of land at \$5 per acre, for

cost of fertilizers and cost of labour. In figuring the total value of the acreage yield, potatoes have been figured on a basis of 40c. per bushel, turnips, 10c. per bushel; mangels, 15c. per bushel; oats, 50c. per bushel; peas, \$2.00 per bushel; corn for seed, \$1.00 per bushel; corn for silage, \$2.75 per ton. It will be seen, therefore, that the profits have been figured on a very conservative basis in spite of the fact that many of the winners, because of the superior quality of their product, were able to secure considerably in advance of market prices. The following table shows the winners, cost of production, profit, yield and character of soil and varieties: -

POTATOES.

COUNTY	WINNER	ADDRESS	Cost	Prod.	Profit	Yield
Brant	Shirley C. Davis	Brantford	\$23.67	\$69.49	239 bus.	Clay loam, following sod, farmed 75 years, 7 loads manure, Paris green; Sir Walter Raleigh.
Bruce	Wm. J. Crawford	Walkerton	\$45 03	\$120.02	415½ bus.	Sandy loam, following oats, farmed 24 years, 10 loads manure, Paris green; Pearl of Savoy.
Bruce	C. L. Lamb	Walkerton	\$44.80	\$84.00	325 bus.	Sandy loam, following buckwheat, farmed 50 years, 17 loads manure; Paris green; Pearl of Savoy.
Dufferin	Jas. D. L. Crombie	Mono Mills	\$32.80	\$96.65	323½ bus.	Clay loam, following pasture, farmed 50 years, 12 loads manure, Paris green; Early Rose.
Dufferin	Russell R. Oliver	Waldemar	\$28.49	\$87.77	293 bus.	Clay loam, following rape, farmed 15 years, 11 loads manure, Paris green; Delaware.
Durham	Reginald I. Fallis	Millbrook	\$36.96	\$86.34	312 bus.	Clay loam, following oats, farmed 75 years, 15 loads manure, 200 lb. potash and phosphate; Bordeaux, Carmen No. 1.

COUNTY	WINNER	ADDRESS	Cost	Prod.	Profit	Yield
Leeds and Grenville.....	Hayden H. Hayes.....	Athens. . . .	\$38.08	\$76.60	288 bus.	Clay loam, following hay, farmed 30 years, 10 loads manure; Bordeaux, Green Mountain.
Middlesex.....	Campbell Lamont....	Mt. Bridges....	\$32.62	\$167.18	501 bus.	Sandy loam, following sod, farmed 60 years, 15 loads manure, seed hill selected for five years, Bordeaux mixture, Paris green and arsenate of lead; Dooley.
Norfolk.....	W. G. Johnstone. . .	Vittoria. . . .	\$27.75	\$49.85	208 bus.	Sandy soil, following clover, farmed 40 years, 10 loads manure; Rural New Yorker.
Northumberland..	Maurice Herrington.	Hilton. . . .	\$46.15	\$105.85	385 bus.	Clay loam, following sod, 12 loads manure, farmed 15 years, Paris green and arsenate of lead; Carmen No. 1.
Ontario.....	Chas. E. Broughton..	Whitby.....	\$37.82	\$64.51	259 bus.	Sandy loam, following oats, farmed 75 years, 600 lb. Potato Special 2-8-10, Bordeaux and arsenate of lead; Empire State.
Oxford.	Nelson Innes. . . .	Bright. . . .	\$60.82	\$70.18	330 bus.	Clay loam, following pasture, Paris green; Admiral Dewey.
Rainy River.. . .	O. Cameron	Emo.	\$58.30	\$99.70	410 bus.	Sandy loam, following clover, farmed 4 years, 20 loads manure, Paris green; Delaware.
Simcoe... ..	Geo. D. Coutts. . . .	Midhurst....	\$37.10	\$116.15	403 bus.	Sandy loam, following wheat, farmed 50 years, 12 loads manure, Paris green; Beauty of Hebron.
Simcoe... ..	Ira O. Partridge.....	Barrie	\$36.10	\$111.10	376 bus.	Clay, following oats, farmed 40 years, 15 loads manure, Paris green; Clark No. 1.
Welland.....	Geo. Moore	Forks Road.	\$60.33	\$62.07	320 bus.	Clay, following wheat, farmed 50 years, 16 loads manure, 175 lb. 4-6-10 fertilizer, Paris green and Bordeaux; Delaware.

OATS.

Carleton.....	Alfred Denison. . . .	Pana... . . .	\$10.93	\$30.57	83 bus.	Clay loam, following corn, farmed 4 years; Banner registered.
Dundas.	Blake Nephew.	Finch.....	\$13.67	\$27.33	82 bus.	Clay loam, following pasture, farmed 12 years; O.A.C. 72.
Dundas.....	Wm. B. Hamilton.....	Chesterville....	\$15.70	\$25.30	86 bus.	Clay soil, following corn, farmed 60 years; O.A.C. 72.
Frontenac.....	Russel Shillington....	Harrowsmith..	\$13.08	\$16.67	59½ bus.	Clay loam, following potatoes, farmed 60 years; Banner.

COUNTY	WINNER	ADDRESS	Cost Prod.	Profit	Yield
Frontenac	J. W. Orr	Glenburnie	\$11.75	\$12.25	48 bus. Sandy loam, following potatoes, farmed 75 years; Banner.
Haldimand	Lester Strohm	Decewsville	\$16.57	\$18.43	70 bus. Clay, following corn, farmed 60 years; Silver Mine.
Lanark	Cecil Owens	Kinburn	\$10.42	\$28.68	76 bus. Clay loam, following sod, farmed 50 years; Banner.
Lanark	H. Smith	Pakenham	\$11.20	\$25.42	75½ bus. Clay loam, following roots, farmed 90 years; Banner.
Middlesex	Arthur Pincombe	Strathroy	\$12.38	\$22.62	70 bus. Clay loam, following mangels, farmed 50 years, 18 loads manure; Siberian.
Muskoka	Alvin A. Goltz	Bardsville	\$11.08	\$29.92	82 bus. Clay loam, following sod, farmed 13 years; Improved Scotch.
Peel	J. C. Salisbury	Brampton	\$13.50	\$23.00	73 bus. Clay loam, following potatoes, farmed 75 years; O.A.C. 72.
York	Angus Cowieson	Queensville	\$10.30	\$28.70	76 bus. Clay loam, following mangels, farmed 70 years; Rennie's Earliest.
York	Raymond Morton	Keswick	\$12.23	\$22.52	69½ bus. Clay loam, following mangels, farmed 75 years, White Wave.

PEAS.

Thunder Bay	Ross McKenzie	Murillo	\$23.50	\$53.50	38½ bus. Clay loam, following barley, farmed 30 years, 14 loads manure; Canadian Beauty.
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TURNIPS.

Renfrew	Wm. Ryan	Renfrew	\$26.80	\$74.80	1016 bus. Sandy loam, following potatoes, farmed 80 years, 4 loads manure; Rennie's Prize.
Victoria	G. F. Manning	Woodville	\$28.30	\$80.70	1090 bus. Clay loam, foll wing mangels, farmed 30 years, 13 loads manure; Canadian Gem.

MANGELS.

Peterborough	Thos. Collyer	Norwood	\$30.80	\$50.98	681½ bus. Clay loam, following peas and oats, farmed 50 years, 11 loads manure; Yellow Leviathan.
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CORN FOR SILAGE.

Grey	Wilford R. Graham	Markdale	\$18.03	\$39.17	20.75 tons Sandy loam, following clover, farmed 50 years, 10 loads manure; White Cap Yellow Dent.
Manitoulin	Ray Jennings	Barrie Island	\$12.40	\$55.03	24.50 tons Clay loam, following sod, farmed 30 years; White Cap Yellow Dent.

COUNTY	WINNER	ADDRESS	Cost	Prod.	Profit	Yield
Manitoulin	John Williamson.	Mindemoya.	\$23.95	\$28.30	19 tons	Clay loam, following carrots, farmed 12 years, 10 loads manure; Australian White.
Norfolk.	Delbert Butler . . .	Simcoe. . . .	\$18.07	\$29.67	17.35 tons	Clay loam, following pasture, farmed 60 years, 8 loads manure, 250 lb. 2-8-10; Leaming.
Oxford.	Allistor Innes. . . .	Bright...	\$15.27	\$58.76	26.60 tons	Clay loam, following old pasture, farmed 80 years, 6 loads manure; Longfellow.
Prince Edward	Whytock Fox. . . .	Bloomfield.	\$16.81	\$40.72	20.80 tons	Sandy loam, following tomatoes, farmed 100 years, 14 loads manure; Wisconsin No. 7.

CORN FOR SEED.

Essex	Tyler Humber. . . .	Cottam.	\$13.70	\$81.30	95 bus.	Black loam, following sod, new land; Bailey.
Essex.. . . .	Forest J. Adams. . .	Arner	\$12.55	\$77.45	90 bus.	Sandy loam, following clover sod, farmed 50 years; Bailey.
Lennox and Addington.. . .	Lee Flynn	Tamworth. . .	\$32.45	\$73.19	105½ bus.	Clay soil, following clover sod, farmed 95 years, 30 loads manure; Longfellow.
Lennox and Addington. . . .	John J. Kearns	Tamworth . . .	\$20.90	\$44.23	65 bus.	Clay loam, following clover sod, farmed 40 years, 10 loads manure; Longfellow.

THE HOG FEEDING CONTEST.

In the "Feeding Hogs for Profit" competition, conducted by the Ontario Department of Agriculture, the hogs were selected at six weeks of age and a value of \$4.00 was placed on them at that age. Contestants were allowed to select four and finish with three. They were fed until 26 weeks of age and a record kept of the amount of food used each week. At the conclusion of the period allowed

the hogs were weighed, 15 per cent being deducted for shrinkage, and a value of 8½c. per pound, the then market price, allowed. The prize was awarded by taking into consideration both the profit and the type, 50 per cent being allowed for each, and the bacon hog score card being used for scoring type. The following are the winners:—

COUNTY	WINNER.	Breed	Average Cost Production	Average Value	Average Profit
Brant.....	C. H. Summerby, Paris.	Yorkshire	\$10 83	\$14 59	\$3 75
Bruce.	Thos. G. Smith, Walkerton.	Yorkshire	13 51	17 67	4 16
Carleton. . .	Garnet Howes, Metcalf.	Yorkshire	13 48	20 65	7 17
Essex	Russell O'Neill, Paquette Station.	Duroc	11 51	21 45	9 94
Durham	H. Earle, Ida.	Yorkshire	11 56	20 04	8 48
Frontenac . .	H. Moreland, Harrowsmith.	Yorkshire & Tam- worth cross	15 62	21 50	5 88
Grey	Arthur Atkinson, Rock Mills.	Yorkshire	12 04	23 60	11 56
Haldimand.. .	Elmer Winderken, Cayuga.	Yorkshire & Duroc cross	10 56	18 64	8 08
Lambton . . .	Roy Gouldie, Petrolia.	Yorkshire	15 00	20 18	5 03
Manitoulin . .	Archie Campbell, Foxey.	Yorkshire	13 04	18 57	5 53
Norfolk . . .	Willie Myerscough, Bealton.	Tamworth & Berkshire cross	12 79	21 62	8 83
Ontario	Lorne Barton, Uxbridge.	Yorkshire	13 39	19 40	6 01
Oxford	Glen Topham, Burgessville.	Chester White	9 38	20 63	11 26
Peel	M. D. Monkman, Brampton.	Yorkshire	11 80	18 41	6 61
Peterboro . . .	Ambrose English, Norwood.	Yorkshire	10 12	16 83	6 71
Rainy River . .	Percy Locking, Emo.	Yorkshire	13 26	17 76	4 50
Victoria. . . .	Austin Reid, Reaboro.	Yorkshire	11 07	14 59	3 52
York	Victor Marchant, Lloydtown.	Yorkshire	9 82	15 90	6 08

These contests have evoked great interest and have undoubtedly had much influence in emphasizing the business side of farming as well as the practical value of modern

methods. They have been made possible through the money available under the Federal Agricultural Instruction Act. They will be continued throughout the coming season.

NOTE.

THE Ontario Department of Agriculture during November and December carried on short courses in the judging of live stock at forty-two centres, distributed over twenty-three counties.

The work was largely in the hands of district representatives. The courses included the judging of heavy horses, light horses, beef cattle, dairy cattle, sheep and swine. The courses were from two to three days duration and were well attended.

SASKATCHEWAN.

NOTES.

IN view of the fact that the co-operative marketing of wool in Saskatchewan was such a success last year, the Department of Agriculture at Regina is making preparations to repeat and enlarge the work during the coming season. It is necessary to make a list of all the names and addresses of sheep owners throughout the province, and with this end in view a circular has been addressed to the secretaries of the rural municipalities, asking for names and addresses of sheep owners.

Those who took part in the wool marketing scheme last season obtained from four to eight cents per pound extra for their wool.

Mr Hunter, of the Live Stock Branch, has just returned from an extended trip through the province made to inspect the cattle sold to the farmers under the department's distribution scheme. He reports that the cattle have gone into the winter in good condition, and that the farmers generally are well satisfied with the quality of the cattle purchased for them. Much interest is being shown and many letters are

being received by the Live Stock Branch inquiring as to the department's plans for the distribution of cattle and other live stock in 1915. As far as can be foretold at present this work will be undertaken on fully as large a scale as in 1914. The notes given in settlement for stock purchased in 1913 and 1914 are on the whole being met satisfactorily.

The Department of Agriculture of Saskatchewan on January 15th commenced a series of dairy meetings in connection with which there was used a demonstration car. Their program provided for meetings at thirty-nine places, the series to be completed on February 17th. The co-operation of the College of Agriculture and of the Canadian Pacific Railway Company was secured and a first-class passenger coach was fitted up under the direction of the Dairy Commissioner for inspection purposes. The work included addresses covering general dairy topics with particular reference to the improvement and management of a dairy herd. Lantern views were used in connection with the addresses.

Within the last five or ten years the colleges of agriculture have, by extension work, been able to attack the problem of rural life in a new way. This extension work includes such efforts as local agricultural surveys, demonstrations on farms, nature study, and other work in schools, boys' and girls' clubs of many kinds, crop organizations, redirection of rural societies, reading clubs, library extension, lectures, travelling schools, farmers' institutes, inspection of herds, barns, crops, orchards, and farms, publications of many kinds, and similar educational effort directly in the field.—*Report of the United States Country Life Commission.*

PART III.

Provincial Departments of Education.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF EDUCATION.

ELEMENTARY AGRICULTURAL INSTRUCTION.

PRINCE EDWARD ISLAND.

BY R. H. CAMPBELL, SUPERINTENDENT OF EDUCATION.

FOR many years past Prince Edward Island, like most of the other provinces of Canada, has had agriculture and botany on its school and college courses of study and fairly good work was done in these as in other subjects. But as taught and learned they lacked interest and force. They were taught and studied chiefly because a certain knowledge of them was required for matriculation examination and for teachers' licenses. They were generally regarded as something extraneous to the ordinary school work rather than as a vital and necessary part of it. Confined as they were to the highest classes in the schools these studies did not affect the great majority of the pupils nor influence appreciably their mental outlook nor serve in any sense for vocational guidance.

In the summer of 1913 the first attempt was made to broaden and deepen the course in elementary agriculture and nature study in the schools of the province. The Honourable the Commissioner of Agriculture became convinced that a part of the Dominion grant provided under THE AGRICULTURAL INSTRUCTION ACT might very profitably be spent

in giving our teachers a wider educational outlook and a deeper sense of the value of "Rural Science" as a means of training the pupils for intelligent and useful citizenship in an agricultural community. Consequently a "Short Course" for teachers was held for two weeks in the summer of 1913. The best instructors procurable were obtained and some 260 teachers studied assiduously and with results very plainly discernible in improved work in the rural schools during the following school year.

But that did not go far enough. Up to this time only adults or at any rate persons beyond school age were considered in the expenditure of the Dominion grant for the promotion of agricultural education. It began to be perceived, however, that the public schools formed an admirable agency for the profitable expenditure of part of that grant, that in fact there was no way in which a comparatively small expenditure of money could be made to produce such important results as by the judicious encouragement of "Rural Science" study in the public schools. Such study by interesting the pupils in the things around them and by

linking together home work and school work would make the latter worth while for those boys and girls whose schooling was about to terminate, would thus hold them longer in school and could be made to influence powerfully their attitude towards country life.

Shortly after the Agricultural Instruction conference held by the Minister of Agriculture in Ottawa last March and largely as a result of that conference, the government of Prince Edward Island decided to make "Rural Science" an important part of the ordinary school curriculum and to expend thereon a part of THE AGRICULTURAL INSTRUCTION ACT grant. There were difficulties in the way. It was necessary that there should be no conflict of authority between the Department of Agriculture and the Department of Education and that there should be no duplicating of work nor overlapping of activities. These difficulties were overcome by the cordial co-operation of the two departments. Instead of appointing one or more directors or inspectors to supervise the "Rural Science" work as distinct from the ordinary subjects of the course, it was decided to regard the new study not as something extraneous but as an essential and vital part of the ordinary school curriculum, standing on exactly the same footing as the other subjects and to be supervised by the ordinary inspectors who continue to be under the control and direction of the Superintendent of Education. In order that this work of supervision should be well done, the number of inspectors was increased from five to ten and the Department of Agriculture provided a special six weeks' course for all inspectors to fit them more thoroughly for their duties. The ten inspectors are nearly all practical farmers as well as practical educationists and are very well qualified for their duties. Each in-

spector has charge of a group of not more than fifty schools, all of which he can reach without travelling very far from home. He is thus able to give very close and careful supervision to his schools and to become a real educational leader in his small inspectorate.

To give a further impetus to "Rural Science" study, the Department of Agriculture provided a second summer school for teachers in July, 1914. It was held in Charlottetown, lasted three weeks and was attended by about two-thirds of all the teachers in the province. For the guidance of these teachers a well thought out course in nature study was drawn up by educational and agricultural experts; and as an encouragement to put forth their best efforts teachers were given an opportunity to win a substantial bonus by doing well the work of the "Rural Science" course. To be entitled to this bonus a teacher must have a well kept school garden properly used in the instruction of the pupils and have also five "home projects" being conducted in five different homes. Five additional "home projects" are regarded as equivalent to a school garden and the more "home projects" successfully conducted the greater the amount of the bonus.

It is perhaps too early to speak of results, but the outlook is certainly encouraging. We feel that we are on the right track and that we are succeeding in making "Rural Science" a vital part of the training of country boys and girls. Already in hundreds of schools children are being taught to observe and to do, to recognize the beauty and significance of common things, to realize the dignity of labour and the joys of country life. They are learning too, to look to their own province, its still undeveloped resources and its splendid opportunities as a fitting field for their future toils and triumphs.

NOVA SCOTIA.

BY A. H. MACKAY, SUPERINTENDENT OF EDUCATION.

HISTORICAL.

AGRICULTURAL Education so far as it has been affiliated with the Education Department in Nova Scotia, may be said to have begun under the late Sir J. W. Dawson who was the first Superintendent of Education—from 1850 to 1855. He not only encouraged attention to this side of education, but made several contributions towards the improvement of agriculture in the province.



A. H. MACKAY, B.A., B.Sc., LL.D., F.R.S.C.
Superintendent of Education for Nova Scotia.

One of these was published as a text book in Montreal in 1864 under the title "Agriculture for Schools," and was used for many years in Nova Scotia.

From 1855 to 1864 his successor was Rev. Dr. Alexander Forrester, who was also appointed simultane-

ously to the principalship of the Normal School in Truro. He planned to have a farm in connection with the teachers' training college, had the land bought, and started a monthly paper under the title of the "Journal of Education and Agriculture." Later this publication developed into the "Journal of Education" published ever since by the Department of Education, and the "Journal of Agriculture" published for many years after by the Secretary for Agriculture.

On the introduction of the Free School System in 1864, Theodore Harding Rand became Superintendent. Although he followed the reformers in Europe in laying stress on the English, mathematical and scientific subjects, he allowed the proposed Normal farm lands to be used for other purposes.

In 1884 Dr. David Allison succeeded him. In 1885 the nucleus of the present provincial farm on which the present College of Agriculture has grown up, was bought and the provincial School of Agriculture was established. The Provincial Secretary has always acted as Minister of Education and Agriculture, and so exercised a condominium over the two departments which greatly facilitated their co-operation. Prof. George Lawson of the University of Dalhousie was Secretary for Agriculture from 1864 to 1895, and co-operated with the Superintendent of Education in the erection of the provincial School of Agriculture in 1885, in affiliation with the provincial Normal School. The Normal students took as a portion of their training the science underlying the theory and art of agriculture.

In 1898 the College of Agriculture building was destroyed by fire; but for three years the scientific work was continued in the town of Truro,

until the "Science Building" of the Normal College was erected in 1901. The Government also aided a School of Horticulture at Wolfville from 1893 to 1903. The present Superintendent of Education came into office in 1891 and Dr. Lawson was succeeded in the secretaryship of Agriculture by the present incumbent, Melville Cumming, B.A., B.S.A., in 1907.

It was deemed desirable to develop both agricultural and horticultural education as far as possible in affiliation with the teachers' training college. There was a party desirous of having the institution in another good horticultural and agricultural centre of the province. We called in to address the legislature in favour of associating these institutions with the Normal College at Truro, the present Dr. Jas. W. Robertson, C.M.G., whose argument was so effective that even the leaders of the separation movement moved and seconded the vote of thanks to him.

In 1905 the first of the present fine suite of buildings for the Nova Scotia College of Agriculture was erected, and provision was made for the combined work of horticultural and agricultural instruction and research, to some extent in affiliation with the Normal training.

From 1885 to 1904 the School of Agriculture was subordinate to the Normal School, as it was then called. A qualified teacher who obtained its diploma in addition to the regular course, and taught in a school with appropriate equipment, received an extra grant of \$100 which later became \$30, \$60 or \$90 per year, according to the character of the school and the work done. About 500 students took partial or full courses from 1885 to 1904; but the number of teachers holding the agricultural diploma and teaching in schools which could qualify for the extra grant was seldom more than a dozen per year.

It was said by some critics that many of these schools were doing no better elementary agricultural work than the more successful ordinary Normal graduates. It was said, and with some truth, that agriculture could not be taught in the elementary school. It was not "agriculture," even when the school garden was utilized as an agricultural laboratory. The general training of the Normal School in which the laboratories and instructors of the School of Agriculture were employed really did develop more or less a scientific and industrial outlook in all the Normal-trained teachers, who for many years up to 1893, were employed only to the extent of about 400 each year. Since that date, this annual quota increased regularly until there are now about 1400 employed annually, filling the half, and the best half of the schools of the province.

In 1904 arrangements were made to utilize the vacation months of July and August for short courses in affiliation with the Normal and Agricultural colleges, in the subjects underlying the intelligent development of agriculture and related industries. Students who previously graduated from the Normal, could thus, without throwing up their schools, continue the course and eventually in one, two or three years qualify for the Agricultural diploma.

In 1908, it was determined to change the pretentious name "Agricultural" into "Rural Science" elementary science forming the foundation of and an introduction to Agriculture. We had already divided "Manual Training" into (1) "Mechanic Science", and (2) "Domestic Science." It readily followed that (3) "Rural Science" might better represent the general scope of our proposed work than the term "agriculture" or "elementary agriculture" especially as "elementary horticulture" might be a closer approximation, and even forestry and arboriculture should be included.

RURAL SCIENCE SCHOOLS.

In 1908 this reorganization came into effect. Teachers employed in their own schools during the year, attended the summer (or vacation) courses in July and August. After qualifying (in one, two or three years) they were awarded Rural Science diplomas entitling them to extra grants according to the character of the school.

These grants were payable in addition to the provincial aid to the teacher. School gardens of the various degrees of efficiency, might, on the Inspector's recommendation, receive aid from the municipal fund for school garden purposes. The regulations framed then form the substantial basis of those in force at present.

The Rural Science Training School (active in July and August) was staffed by the instructors of the Normal and Agricultural Colleges and special instructors from abroad. For the first two years, John Dearness, vice-principal of the Normal School, London, Ontario, acted as Dean, and thus contributed to the forming of the character of the school.

DOMINION AID.

On the intimation of the policy of the Dominion Department of Agriculture to aid elementary agricultural education in each province, it was deemed appropriate to apply the new funds, especially at the start, to some distinctive and specific form of work, while allowing the provincial funds released to be applied in growing amounts to the general development of the schools.

The aid was applied then, to the support of a Director of Rural Science schools, Mr. Loran A. De-Wolfe, M.Sc., to the support of the vacation session of the Rural Science Training School in affiliation with the Normal and Agricultural Colleges under the Deanship of Clarence D.

Moore, M.A., F.R.S.C., to the partial payment of expenses of the successful students taking the five weeks vacation courses; to the giving of extra grants to qualified teachers in qualified schools, of \$15, \$25, \$50 or \$75 per year according to the character of work done; to the giving of aid when necessary to school sections in fitting out school gardens with suggestive samples, or developing "home gardens" or other approved agricultural specialties, under the inspection of the Director who is also aided by the regular school Inspectors who co-operate and mutually report.

During the school year, ended in July last, no less than 63 teachers and schools were qualified for the rural science grant of some grade to the teacher. These schools were distributed through 15 of the 18 counties of the province. Their average salary was \$476.35, of which about \$329.54 were contributed by the school section, \$112.13 by the Provincial Government and \$34.68 were apportioned out of the Dominion fund. The total grant from this fund was \$2,185 as against \$360 paid as the rural science grant to teachers the previous year.

The development in the first year under a Director, has been very marked.

Other schools have also been stimulated by the gifts of seeds, bulbs, flowers, special fertilizers, by circulars of instruction for school and "home" gardens under school supervision, by the formation of clubs, school garden exhibitions, and by gifts of eggs of improved varieties of fowls to be bred by pupils. About \$1300 were expended in such work in schools which in the near future will be employing, as soon as they can be procured, teachers with Rural Science diplomas; and for books for the instruction of the teachers. The Secretary for Agriculture is also being continuously consulted and kept in touch with this work.

In all these schools the pupils of the section have to make provision for the establishing of a school garden and its heavy work, and to provide a school library with some books referring to the rural industries possible. The Provincial Government aids this work by giving from \$5 to \$10 to the teacher for acting as librarian, according as the library is up to the first or second standard, and if the annual report is properly made out, and shows at least the prescribed circulation.

The Provincial Department, of course, provides entirely for the cost of training the teachers in the Normal College from Sept. to June, and even for the payment of their travelling expenses. During the winter the more promising students are being observed and selected for the special rural science courses which become partly differentiated in April. After the close of the Normal at the end of June, these together with Normal trained teachers employed in the public schools, take up the vacation or summer courses which constitute the Rural Science Training School proper, as distinguished from the Normal.

THE TOTAL DOMINION AID TO RURAL SCIENCE.

To enlarge the equipment of the Rural Science Training School originally provided by the province, about one thousand dollars worth of microscopes, books and other apparatus were obtained, which will not have to be duplicated in subsequent years. The salaries of the Director, Dean and the eight other paid instructors accounted for about three thousand dollars more. The minimum travelling expenses of, and bonuses to, the 130 students in attendance amounted to \$1357.95 an average of about \$10 each. The balance, something over four hundred dollars for travelling expenses of the Director, and general expenses, made up the total Dominion aid of \$9,315.35 for the school year.

TOTAL PROVINCIAL COST.

The educational work directed exclusively by the Secretary for Agriculture through the regular and short courses in the College of Agriculture, in travelling, demonstration lectures, model orchards, etc., is not included in the following. Nor has the general work of the Education Department bearing on the nature-study cult, nor its cost been referred to.

In the eight grades of the common schools, the elementary principles of Agriculture are strongly emphasized in the prescribed program, which is amply detailed in the authorized teachers' Handbook.

The Normal College gives a very general course of instruction in these subjects to all teachers attending, including also at least a course in Mechanic or Domestic science; and the Inspectors see that the work is being at least seriously attempted in every school.

The Annual cost of the Normal College and inspection is between \$40,000 and \$50,000. The total cost of the work done under the Education Department (excluding the educational work done under the Secretary for Agriculture and through the College) was \$1,565,000. Of this amount \$342,000 was expended on the general educational system by the Provincial Government; and \$58,000 on the Technical sub-department. The municipalities contributed \$165,000 and the school sections \$1,000,000. To this should be added the cost of the education work done in the Department of Agriculture, in round numbers \$55,000, making the total annual cost of education in Nova Scotia \$1,620,000.

Of the \$61,243.87 granted to Nova Scotia by the Dominion last year, \$9,315.35 was applied by the Rural Science sub-department of Education, and the balance \$51,928.52 by the Department of Agriculture.

CURRICULUM OF THE TRAINING SCHOOL.

The following Regulations of the Council of Public Instruction from the Manual of School Law of 1911, briefly indicate the general scope of the extra work to be done by a trained teacher, before obtaining the special diploma:

263. The Syllabus of the Rural Science Diploma Course is presented below. The Daily Time Table will be so arranged that students in attendance may take also the classes in Physical Training and qualify for the Physical Training Certificate. In addition optional classes will be provided in Music and Photography, and it is contemplated that for the benefit of those who may not have attended the Normal College classes in Pedagogy shall be arranged.

264. Rural Science Diploma Course. Courses will be offered in the Principles and Applications of Nature Study, General Biology, Botany, School Gardening and Horticulture, Agriculture, Physics, Soil Physics, Chemistry, Bird and Insect Study, Bacteriology, Geology, and Mechanic Science.

These Courses, one and all, will be free to teachers or intending teachers, and may be taken by:— (a) those who merely wish to extend their knowledge for teaching purposes; (b) those who hold a license of class A, B or C, and wish to proceed to the full qualification required for a Rural Science diploma.

The work is so arranged that it will be possible for almost any teacher to complete the requirements for this Diploma in three summers, or for one already proficient in the subjects to do so in one term.

Under the new regulations, as printed elsewhere, a teacher who satisfactorily completes one term's work and puts the teaching into practice, will be awarded extra grant the following school year. At the beginning of the next season, the faculty will indicate to those in attendance the amount of work which must be covered in order to qualify for this grant.

During the term, six days in the week, Saturday afternoons excepted, will be devoted to class work, field excursions, and individual work in the laboratories.

265. The tests required for the Rural Science diploma will be regular attendance at the class instruction and in the laboratories; a satisfactory report by the instructors on the class, laboratory and field work of the student, and the passing of an examination at the close of the term upon the topics of the following syllabus. In addition candidates will be required:—

- (a) To present for examination such collections of natural history specimens, properly prepared, mounted and named, as may be required in connection with any subject of the course.
- (b) To submit satisfactory reports on field work or readings in connection with any subject of the course prescribed to be done between terms.
- (c) To have demonstrated ability to make practical application in the school room of the principles, etc., inculcated in the course as evidenced by the favourable report of the Inspector on the school conducted for one or more terms by the candidate.

SYLLABUS.

Of the 13 subjects in the syllabus the specifications of only a few as samples will be given in the words of the Manual of 1911:

266. NATURE STUDY. Aims and purposes of Nature Study.

Distinction between Nature Study and information about nature on the one hand and formal science on the other.

Stages in Nature Study lessons:— (1) observation (as active experience). (2) reasoning upon the material observed or actions performed, and (3) expressing the observations, actions, judgments, applications, in the most suitable or by different modes.

How geography (in part), physiology (in large part), arithmetic (in part), may be taught by Nature Study.

The correlations of Nature Study with literature, the expressive arts, arithmetic, mechanic and domestic science, and agriculture.

The preparation of the Teacher: proficiency in heuristic (investigational) as distinguished from informational or memoriter methods of instruction; elementary knowledge of the sciences; knowledge of the use of annuals and books of reference, with a view, not to acquire knowledge to restate to the pupils, but to guide them in their investigations.

The place of Nature Study in the Time Table.

Reference Book:—*Nature Study*, Dearness (Copp, Clark Co.), Toronto.

272. AGRICULTURE. The types of farming suited to Nova Scotia with a consideration of underlying principles. Comparison

of the methods pursued by farmers in the various parts of the province. Observation of the methods practised at the College Farm.

Field Crops:—The characteristics of the different crops; the methods of successful cultivation of each.

Fertility of the Soil:—Its development and maintenance; the principles of the various tillage operations, drainage, rotation of crops, fertilizers.

Implements and labour-saving machinery.

Animal husbandry:—The economic principles involved; types and breeds of farm animals, including poultry; the necessity of an ideal, and the methods of realizing it; principles of feeding and management. Observational study of the animals of the College Farm.

Reference Books:—*Soils*, Burkett, (Orange Judd Co.) *Types and Breeds of Farm Animals*, Plumb (Ginn & Co.) Other books will be recommended.

270. **SOIL PHYSICS.** The methods of taking samples of soil.

Mechanical analysis of three typical soils.

Determination of the percentage of air and water in soil.

Temperature of soil, and its modifying factors.

The effects on clay of lime, salt, gypsum and humus.

The relation of size of particles of soil to water-holding power.

The capillarity of at least two kinds of soil, and the rate of percolation through them. Power of air-dry soils to absorb water. Texture of soils—heavy and light.

Soil Solutions.

Reference Books:—*Soils*, Burkett, (Orange Judd Co.) *The Soil*, King, (MacMillan & Co.)

278. **MECHANIC SCIENCE.** Brush Drawing:—Materials, their preparation and use. A short course in impression work and brush drawing proper. Applications to nature work in the other courses.

Paper and Card-board Modeling:—The necessary drawing for the development of models. The manipulation of tools and materials. Students to make, at least, ten flat and six solid models and one exercise in book-binding.

Wood-work:—The use of tools. Students to make plant-press, insect box, and spreading board, or equivalent models.

Reference Book:—*The Theory of Educational Sloyd*, Otto Salomon. (Geo. Philip & Son, London, Eng.)

From this sketch it will be seen that the general idea of utilizing the agricultural interests in support of education, and of developing an intelligent interest in agriculture through the elementary schools, originated as early as the time of Dawson, was specially emphasized by Forrester, and after lapsing into desuetude for a season was revived by Allison. From him up to the time of the creation of the Advisory Board of Education in 1907, agriculture was put on the high school course and was imperative as one of the scholarship subjects for those who became teachers. On the recommendation of the Advisory Board "James' Agriculture" and other subjects were thrown out of the high schools for the purpose of simplifying and reducing the high school work. Among other subjects thrown out were book-keeping, physiology and hygiene, and navigation; while the work in other subjects was reduced or made optional.

The stimulus given to the cult of elementary Agriculture by the Dominion Grant was therefore received with great delight especially by those who did not appreciate the reactionary movement designed rather to emphasize the study of foreign languages. Those interested in the more general development of the industrial bias in general education were and are still hoping for such a general additional scheme of aid as has been outlined in the "Report of the Royal Commission on Industrial Training and Technical Education."

An educational system based on the accurate study and mastery of the forces of nature and self, combined with an effective mastery of the mother tongue and the history of man, is a great *desideratum* for all. Supplemented by an opportunity for the study of linguistics on the part of those having a taste for them, or likely to find them useful, such a system would probably have no intelligent opponents.

NEW BRUNSWICK.

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

IN New Brunswick the expenditure for elementary agricultural education is under the control of the Minister of Agriculture. By the provisions of the Schools Act, the officer administering this work, while he is an appointee of the agri-



W. S. CARTER, M.A., LL.D.

Chief Superintendent of Education for New Brunswick.

cultural department, has authority in the public schools carried on by the Board of Education whose executive officer is the Chief Superintendent of Education.

The Board of Education has prescribed a course of instruction in nature study and agriculture for use in all the schools. A monthly apportionment of subjects under the headings, plants, animals, physical nature and environment, has been authorized so as to assist teachers in overtaking the work required by the course of instruction for each grade.

Regulations have been adopted by the Board of Education providing for the qualifications of teachers and the grants to be paid to trustees and teachers.

It is the aim and purpose of both departments to assist in giving to the children of every school district, opportunities for a good rural education, to encourage in the schools a careful study of the resources of the country in general and of local conditions in particular.

It is recognized that the time to make the deepest and most lasting impressions regarding the advantages, possibilities and needs of New Brunswick is during the susceptible period of childhood and youth. Then the physical activities are more naturally the channels through which development of intellect is encouraged.

Outdoor education is therefore being employed as a feature of general school work. Purely book education in relation to subjects of local import, of nature study and agricultural quality, has failed in accomplishment of results in the past. Therefore school gardens, home plots, school ground improvement, school fairs, the study of animals, especially of those of economic value, best adapted for local purposes, are being made units of instruction and presented to pupils in an objective and practical manner. The principle of "learning by doing," of observing matters of environment, suggests the method by which the work is being introduced.

It is also recognized that in order for such work to be made of educational value the teachers in the public schools must themselves be alive to the importance of knowing how best to present it to their pupils. In order to qualify the public school teachers to this end a Summer Rural

Science School has been established at which practical instruction in school gardening, nature study, and the fundamental principles of the natural sciences may be given together with the best methods of awakening interest among the people and of correlating such work in the schools with the other subjects of the school course.

The expenditure for this work during the year to close on March 31st next, will be considerably in excess of that for the year previous.

1. To continue and enlarge the influence of the Summer Rural Science School for teachers.

2. To extend the regular and systematic instruction of nature study and agriculture in the elementary schools.

3. To promote the extension of the school garden idea as an element in general education.

4. To provide a regular plan of home plot work by children under the supervision of the district school



NEW BRUNSWICK RURAL SCIENCE SCHOOL.

Pupils of School at Work in Their Garden.

The amount spent for teacher training will be about \$2,000. Seventy-five teachers and inspectors attended our Summer School whereas only thirteen were trained the year before. School gardens increased in number from twenty-one to thirty-two in June last. The returns are not yet in for the term just ended. The expenditure for this branch of the service will be about \$2,500. For bulletins, official expenses and general maintenance \$3,000 will probably be spent, making a possible total expenditure for the fiscal year in the vicinity of \$7,500.

During the coming year we plan, therefore:—

teachers.

5. To organize boys' and girls' clubs in schools for the study of local conditions and practice in properly conducting public meetings.

6. To encourage teachers and schools to keep local records and to develop local business features in the study of arithmetic.

7. To aid in a better observance of Arbor Day and a permanent improvement of school grounds.

8. To establish where advisable school fairs under careful restrictions, the educational feature being emphasized.

QUEBEC.

BY THE HON. BOUCHER DE LA BRUERE, SUPERINTENDENT OF PUBLIC INSTRUCTION.

THE teaching of agriculture has been not only authorized for years in the schools of Quebec by the Roman Catholic and Protestant committees of the Council of Public Instruction, but has also been a compulsory subject in all rural schools under the general School Law (Art. 3040). The department has also constantly endeavoured to make this effective; but under the conditions which have prevailed not only in Quebec but in the other provinces, and in the states of the American union, until recent years, the teaching of agriculture was very largely perfunctory in its character and had made little impression upon public opinion. For one thing, only an occasional teacher was qualified to put life into the work, or had received the necessary training. Another obstacle has been a prevailing attitude of doubt on the part of the farmer himself as to the practical value of this instruction. In entertaining doubts he was largely justified by the ineffectiveness of much of the agricultural instruction that was offered in the schools.

A great change in public opinion, however, has taken place in recent years. The missionary work of the educational and agricultural authorities of the provinces, and of the Agricultural Department of the Dominion, is at last bearing fruit, and the farmers of Quebec are now vying with those of the other provinces in a desire to recognize the scope, the meaning, the value, and the importance of the application of the results of Science to Agriculture. Consequently, there is now, I am convinced, a very real demand for the teaching of the subject in the rural schools.

To meet this demand both the Roman Catholic and the Protestant

committees are taking forward steps, and are supported in their efforts by the government of the province. Already a number of the Catholic inspectors have taken special agricultural courses at Oka for the purpose of qualifying themselves more particularly to supervise this work in the schools under their supervision, and in May next it is expected that the Protestant inspectors of the province will take a special course to the same end at Macdonald College. The Catholic normal schools of the province are also now giving a most complete course in the subject for the rural teachers, the programme of which was published in my annual report to the legislature of two years ago. These teachers-in-training receive the advantage of lectures by specialists, and a steadily increasing number of them are becoming well qualified to do good work in the schools. I have, indeed, been particularly gratified and encouraged by the very remarkable growth of the school garden idea among the Catholic schools of the province. Each year shows an increased number of such schools and of the pupils deriving benefit from them. This in itself is not, of course, direct agricultural teaching, but it is, I think, an almost indispensable means in most cases.

The Protestant committee has taken steps towards the carrying on of a Summer School for the benefit of teachers who have not attended Macdonald College. The courses given will be in Nature Study and Elementary Agriculture. Arrangements are also being made to have lectures given regularly in the rural model schools and academies by the Macdonald College county demonstrators who are stationed in several counties of the province, and who have already been doing excellent

work in this connection at some of these schools. By the new arrangements this work would be considerably extended and systematized.

Such in brief outline are some of the features of the new movement which is destined, I believe, to have great results in Quebec education.

ONTARIO.

BY A. H. U. COLQUHOUN, DEPUTY MINISTER OF EDUCATION.

THE place of Agriculture in the courses of study in Ontario primary and secondary schools is at present under consideration by the department with a view to a complete reorganization. The aim of the Minister is to emphasize the importance of the subject; to provide for more systematic teaching by teachers trained for the work in special summer courses, and to enlist the services of the school inspectors of the province by encouraging and inspecting the classes. Pending the announcement of the new programme, a brief outline of what has already been done will suffice.

THE ELEMENTARY SCHOOLS.

With the introduction of Nature Study and School Gardening into the course of study of the elementary schools, about twelve years ago, the Ontario Department of Education paid special grants to the School Boards of country schools to assist them in establishing gardens. In 1908 the payment of special grants was extended to the teachers. In 1911 more emphasis was placed upon the systematic teaching of agriculture in connection with the garden work than had been the case hitherto.

At the commencement, the special training of teachers was arranged for at the Ontario Agricultural College and this has been continued and extended from year to year. The trained teacher is considered to be the prime necessity for the sound establishment of any permanent scheme of agricultural teaching. For

a successful ten-weeks' spring course or two summer courses, the department grants the *Elementary Certificate in Agriculture and Horticulture*. Holders of this certificate are allowed the maximum grant but other competent teachers are encouraged also.

In 1912 a Director of Elementary Agricultural Education was appointed. For this position Mr. S. B. McCready, M.A., of the teaching staff of the Ontario Agricultural College was selected. During the past two years the director has been assisted during the summer months by a staff of field agents whose duties were to visit schools, inspect the work, confer with trustees, help the teacher and arouse public interest in the movement. To enlist the sympathy of the whole body of inspectors and to give them an intelligent insight into the scope of the work, the department provided in 1913 a week's short course at Guelph and offered every facility for those who attended.

To widen the interest in it amongst rural teachers a Rural Teachers' Conference, attended by two representative rural teachers from each teachers' association, was held during the first week of August in 1914. Encouragement is given to the work also by the distribution of bulletins, planting material and instruction sheets. Exhibits have also been held at teachers' conventions and fall fairs.

THE SECONDARY SCHOOLS.

During the past two years courses in agriculture have been outlined

and carried out in a number of secondary schools. The plan adopted in the case of elementary schools, of having teachers who have taken special training at Guelph, and of paying grants to such teachers and to boards where the prescribed work is satisfactorily done has been applied to high schools.

For two successful Summer Courses at Guelph, teachers are granted the *Intermediate Certificate in Agriculture and Horticulture*. As in the case of the elementary school teachers, those attending the summer courses are allowed their travelling expenses. This puts the teachers in all parts of the province on an equal footing so far as expenses are concerned.

No text-book is prescribed for this work, but each school is expected to provide an adequate supply of standard texts and periodicals. Besides the instruction in the class room, each pupil is required to carry out a *Home Project* which must be supervised by the teacher or some committee acting for him.

At the present time thirteen schools are taking up the work. The subject has been given a value in the examination for teachers' certificates and

last summer about one hundred and thirty candidates wrote on the lower school Agriculture paper, and where they took 50 per cent of the marks, were allowed these as a bonus on their totals. Next summer, two of the schools will have candidates writing on middle school Agriculture. Thus the subject is taking its place amongst the recognized high school subjects.

The department arranged with the Universities two years ago for a course leading to the degree of B.Sc. (Agr.) part of the course to be taken while in attendance at the universities of Toronto or Queen's or McMaster and part in attendance at the Ontario Agricultural College. Scholarships are given under certain conditions for the third and fourth years at Guelph. Professional teachers with this degree may teach both science and agriculture in the high schools. When the agricultural departments in high schools are fully developed there is a confident belief that a supply of teachers for them will be available.

These are the salient features of the work already accomplished in agriculture for Ontario schools and the results may fairly be set down as most encouraging.

MANITOBA.

BY R. FLETCHER, DEPUTY MINISTER OF EDUCATION.

IT is not intended in this article to touch upon the work of the Manitoba Agricultural College, chief amongst all the agencies making for agricultural education in the province, with its magnificent buildings and equipment, its large attendance and its efficient staff. The activities of the College are largely under the direction of the Department of Agriculture. This article has to do with the work undertaken and fostered by the Department of Education.

Manitoba is an agricultural province, her people live by the soil. The

Department of Education is therefore interested in the dissemination of information regarding the Science of Agriculture. Every teacher trained in the province, before receiving a permanent certificate, is required to spend one month in the Agricultural College with a view to gaining some idea of the rural viewpoint.

A Director of Agriculture and School Gardening was appointed for the province in 1912. He makes arrangements for the supply of seeds, bulbs and trees to the schools. He travels about during spring and

summer encouraging the teachers to plant gardens, giving instruction in tree culture and soil preparation and advising on the various problems which arise. In the fall and early winter he is busy with school fairs,

of which about 40 were held in the province last year.

Every year the department conducts a Summer School of Science where teachers may take excellent courses in agriculture and gardening under the director's personal supervision.

In addition to this a special grant of \$25.00 is made by the department to every teacher who is recommended by the inspector as doing satisfactory work along this line.

Numbers of Boys' and Girls' Clubs have been formed with the co-operation of the Department of Agriculture, and contests in poultry and pig-raising have resulted.

School Boards have been encouraged to establish high school courses in agriculture, and the department pays one-half of the salary of the specialist engaged for this work. Five high schools in the province last year offered these courses, which were fairly well attended.

Our appropriation last year for the carrying on of this work amounted to \$13,000. As time goes on we may expect this amount to be largely increased.



HON. G. R. COLDWELL, K.C.
Minister of Education for Manitoba.

SASKATCHEWAN.

BY AUGUSTUS BALL, M.A., DEPUTY MINISTER OF EDUCATION.

THE policy of the Department of Education in this province with respect to Agricultural Instruction is in process of development. Saskatchewan, owing to the rapid settlement of the land and the consequent rapid increase in the number of centres requiring educational facilities, has been engaged in grappling with the urgent problem of erecting school districts and operating schools to the exclusion to some extent of the newer movements in education. It is recognised that the most important of these newer

movements is efficient agricultural instruction. In the days of the old North-West Territories, Saskatchewan was probably the first of the provinces to have a well defined course in Nature Study as part of the ordinary school curriculum. Nature Study has also always been an important subject in the Normal Schools.

The organization of the ordinary work of the elementary schools and of the secondary schools is now fairly stable and with the policy in agricultural instruction well defined it is

not going to be a difficult matter to make such instruction an integral part of the educational system. The design at present is to extend agricultural instruction of a theoretical and practical nature to the high schools and collegiate institutes and to the larger town schools, the courses established in the same looking forward to practical work on the farms and to higher courses in the

interpreted as including its material and social aspects. The work will be so devised as to attempt to demonstrate that life on the farm can be made both profitable and pleasant. In addition, instruction in the Normal Schools which will be based on experimental work of an illustrative nature on the grounds, will be so arranged as to train teachers to take up agricultural instruction earnestly in their schools in accordance with the principles already defined.

This statement of the policy of the department is borne out by the appropriations already made which have received the approval of the Ottawa authorities. Two supervisors of agricultural instruction are to be appointed, one attached to the Normal School at Saskatoon, to carry on the direction of agricultural education in the northern part of the province, the other to the Normal School at Regina, whose work will be concerned with the southern part. In addition to a certain amount of teaching in the Normal School in the direction of demonstrations in school gardening at these points, these supervisors will conduct courses of lectures in the Third Class Normal sessions at different points in the province, will gather teachers together for instruction at other centres and assist in the formulation of courses in agriculture at those points where local authorities desire to establish them and generally will have the direction of various special phases of agricultural instruction throughout the province. Forestry, being a question of very great importance in a prairie country, will have special attention and to this end a bulletin, "Tree Planting for the Schools of Saskatchewan" has already been published and distributed. A book on school gardening is ready for publication.

The appropriation for 1914-15 is as follows:—



HON. WALTER SCOTT.

Premier and Minister of Education for Saskatchewan.

College of Agriculture at the University of Saskatchewan; further, to encourage the practice of school gardening, which will be of a voluntary nature for the present, such gardening to elaborate the elementary principles of horticulture and agriculture but mainly to have an educational value in the stimulation of the initiative of the children and the development of their æsthetic faculties. The basic principle underlying this work will be rural life efficiency

Two Supervisors at \$1,800.00...	\$3,600. 00
Travelling expenses, each \$750...	1,500. 00
One Supervisor in Household Science.....	1,200. 00
Travelling expenses.....	750 00
Publication of bulletins and circulars.....	1,000 00
Grant to School Garden Associations, 7 at \$50.00.....	350. 00
Total.....	\$8,400 00

The experiments of other provinces and states devised to arrive at a solution of this, the greatest of educational problems, have revealed many lessons and undoubtedly a consideration of these will have a great influence on the adoption in Saskatchewan of a policy of agricultural instruction that should promise success from its inception.

ALBERTA.

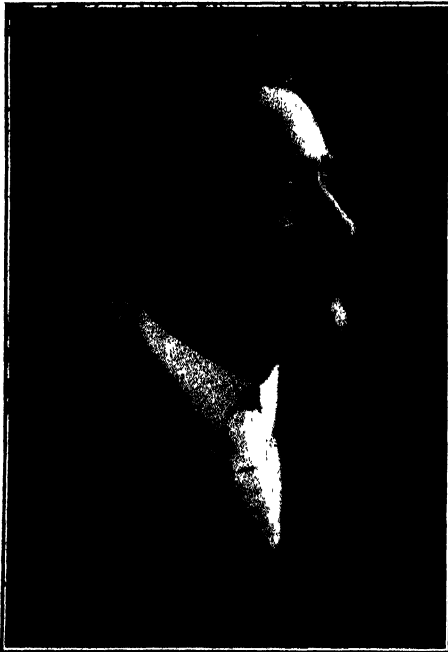
BY D. S. MACKENZIE, DEPUTY MINISTER OF EDUCATION.

AS a preparation for the more formal study of agriculture the Alberta Course of Studies provides for a graded course of Nature Study, beginning in the lowest grades by

them, and gradually extending to the more complex phenomena of nature as observed in weather conditions and in the growth, characteristics and habits of life of the plants and animals with which they are familiar. The work from the first is carried on in the concrete, and, as the investigation in the realms of animal and plant life proceeds, a foundation is unconsciously laid for the more formal study of the Science of Agriculture, with its practical adaptation to local conditions, as required during the last two years of our public school course.

Considerable difficulty has been experienced in securing for the use of the elementary grades of our schools a text book adapted to the conditions existing in the province, but at the present time a committee has under consideration a book written from the Alberta point of view, which, if found satisfactory, should do much in the direction of agricultural instruction in our public schools. In the meantime special bulletins of information are provided as far as possible to meet the needs in this connection.

The Course of Studies prescribed for the first two years of our secondary or high school grades includes a further study of plant and animal life under the names of Botany and Zoology, together with



HON. J. R. BOYLE.

Minister of Education for Alberta.

the training of the children's powers of observation with respect to the simple every day things about

a course in Physical Science, so that an excellent scientific foundation has been laid for a more thorough course in Scientific Agriculture as prescribed for the third year of the high school course. All candidates for admission to our Normal Schools to train as second class teachers are obliged to cover this advanced course, which includes the formation, physical properties and agricultural classification of soils; the relation of soil to moisture, air and heat; the preparation of the seed bed; germination and plant propagation; bacteria as related to soil; the purity, fertility and selection of seed; pollination and fertilization; the parts of plants and their uses; foods, fodders and care of farm animals; the economic values of plants and the independence of plants and animals, together with practical plot work and laboratory experiments and exercises.

The most serious problem confronting the department in connection with its scheme for instruction in Agriculture was the securing of teachers qualified to satisfactorily cover the courses outlined for our schools. This difficulty is being met by making provision for instruction in Nature Study and Agriculture under the direction of the science specialists in our Normal Schools, and also by the organization of Summer Schools for teachers for the purpose of supplementing the teacher's training in this subject as well as in Manual Training, Domestic Science and Art and Physical Training. Sessions have been held during the last two summer vacations and the applicants in each case greatly exceeded the number that could be accommodated. During the summer of 1914, a special course was organized for school inspectors to enable them to more efficiently supervise the work of teachers in the field, and to encourage school boards to introduce and support the work. During the Summer

School of 1915, a special course will be provided for those high school teachers who will be responsible for instruction in Science and Agriculture in their respective schools. As a further inducement to both school boards and teachers to give effect to the prescribed courses, provision has been made for government grants for the encouragement of technical education, in which Agriculture and School Gardening is given first place. The schedule is so arranged that not only does the school board that provides the garden, but also the teacher who gives the instruction and supervises the practical work, share in the grant.

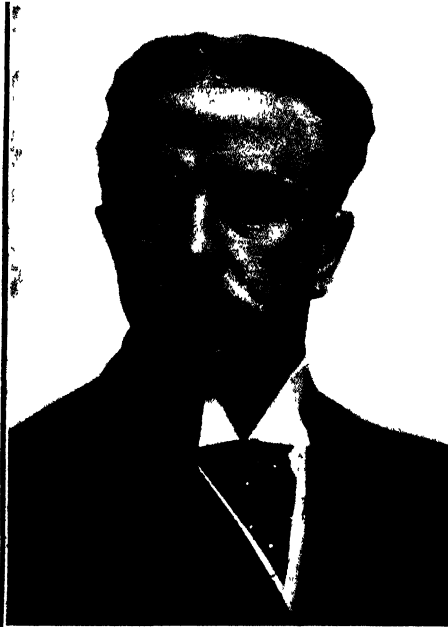
It will thus be seen that an earnest effort is being made to give to Agriculture its proper place in the curriculum, but many are unable to take advantage of these courses owing to the fact that they have been obliged to leave school before even the public school course was completed, or to the fact that they have come to the province from places where such instruction did not form a part of the curriculum. For young men and women of this class noteworthy provision has been made by the Department of Agriculture through the establishment of vocational agricultural schools in connection with demonstration farms at several points in the province. Reports regarding the character of the work done in these schools and the satisfactory manner in which they are meeting the need have already appeared in these pages.

The natural culmination of what has already been attempted along the line of scientific instruction in Agriculture is, of course, the establishment of a Faculty of Agriculture in the Provincial University. Though it is yet premature to make any definite statement in this connection, it is safe to say that the signs of the times are such as to prepare the public for the announcement of another forward step in this direction.

BRITISH COLUMBIA.

BY J. W. GIBSON, M.A., DIRECTOR OF ELEMENTARY EDUCATION.

IN formulating a policy with respect to agricultural instruction the Department of Education for the province of British Columbia aims to conserve and develop not only the rich natural resources of the streams, forests and fertile valleys of the province, but also to develop an intelligent citizenship and a strong, virile manhood worthy of the magnificent heritage with which we have been blessed.



HON. HENRY ESSON YOUNG, M.D., LL.D.
Minister of Education for British Columbia.

We realize that in such a large province, presenting such diversity of physical and climatic conditions on the one hand and of nationalities on the other there are many difficult problems to be solved. It has been said that the solution of all human problems must come through education and we have in this province inaugurated a movement which we

hope may help to solve the rural problem in British Columbia. We hope that by getting boys and girls interested in the cultivation of the soil and in the study of the plant and animal life of garden, orchard, and farm before they leave the public school, many of them may become permanently interested and eventually choose rural rather than urban pursuits. Certainly one of our greatest needs in this province is a truly rural population.

The studies which we propose in elementary agriculture grow in a natural way out of our prescribed course in nature studies. When these studies are properly presented in the primary and intermediate grades they form a logical basis for the studies in agriculture which should follow in the senior grades. In this way elementary agriculture might be regarded as *applied* nature study. Furthermore emphasis is placed upon the importance of correlating the more formal subjects of instruction, such as, arithmetic, reading, composition, drawing, etc., with these first-hand studies in nature and agriculture. Herein the theoretical finds application in the practical; education then becomes closely related to the life experiences of the child. We believe also that the child should be taught to do things in the best way as well as to understand them. Learning *by* doing is even better than learning *and* doing. For this reason school gardening is being emphasized as an important factor in the method of conducting nature studies and instruction in elementary agriculture. Home-gardening schemes may supplement the school garden work or may be substituted for it where the conditions do not warrant the establishing of a garden at the school. To be effective such home gardens must have some supervision by the teacher.

The older boys and girls are also encouraged to enter in the field crop competitions in their districts which have recently been organized by the Department of Agriculture under the immediate direction of farmers' institutes. This will all tend to the formation of farm and garden clubs which will stimulate interest in agricultural pursuits and at the same time give valuable training in methods of organization.

Already in this province substantial progress has been made both in manual training and domestic science, and as agricultural instruction advances close attention will be given to the correlation of these three kindred subjects. Boys will not only acquire skill in the handling of tools but will also get some valuable training in the planning, draughting and construction of farm and house equipment. The girls will learn how to manage a garden as well as to supervise a home, and to grow good vegetables as well as to cook and serve them.

Following the appointment of a Director of Elementary Agricultural education for the province the department held a summer school in rural science for teachers from all parts of the province. A large number of teachers attended the course and it is hoped that these will return for a second more advanced course. The department fully realizes that the ultimate success of the work depends largely upon the character, ability and preparation of the teachers of the province.

In view of the fact that many boys who have become interested in agricultural studies while in the public schools will wish to continue these studies it is the intention of the department to make agriculture an optional subject in the high schools. It is believed by so doing that it will be possible to relate the work done in agriculture in the public and high schools with the regular courses to be given in the provincial college of

agriculture. In certain high schools situated in agricultural districts agricultural specialists will be appointed who will conduct the studies, biology and agriculture, in the high school and will at the same time act as supervisors of school gardening and elementary agriculture in the adjacent public schools. In conclusion the plans and policy of the department of education with respect to agricultural instruction includes the following:—

(1) Thorough preparation of teachers by means of special summer courses in rural science. A first year summer course for which an interim certificate in rural science and school gardening is granted and a second year summer course which when successfully completed will entitle the student to a diploma in rural science and school gardening.

(2) Special grants to teachers holding either the interim certificate or the diploma in rural science and school gardening who carry on the work in their schools.

(3) Special grants to school boards where rural science is successfully carried on.

(4) Improvement of school grounds—draining, grading, planning and ornamental planting and the encouragement of suitable school games is also included.

(5) Assistance in carrying on home gardening schemes under the supervision of the teacher where school gardens are not practicable, or in conjunction with them.

(6) Occasional excursions to observe improved methods in gardening, fruit and grain growing, dairying, live stock and poultry raising, etc., when circumstances will permit.

(7) Elementary agriculture as an optional subject in the high schools. Certain high schools, especially those in agricultural districts, will have on the staff a qualified teacher who is at the same time a specialist in agriculture. Such teacher will be

given charge of the work in botany and animal biology in all classes, and will conduct a course in elementary agriculture for those students who elect to take such a course.

(8) Extension classes in agriculture to be carried on in the high schools for boys or young men who are not regular students in the high school, such classes to be held either during the day or as night classes, or both, as may be found to be of greatest service in the district.

(9) The agricultural teacher in the

high school will also have immediate supervision of the work done in rural science and school gardening in the public schools of the district or municipality and, with the approval of the director of elementary agricultural education, will give assistance to the teachers in these neighbouring schools.

(10) The establishing of a provincial schools' nursery for the growing of suitable trees, fruits, ornamental shrubs and herbaceous perennials for distribution to schools.

The feeling that agriculture must colour the work of rural public schools is beginning to express itself in the interest in nature study, in the introduction of classes in agriculture in high schools and elsewhere, and in the establishment of separate or special schools to teach farm and home subjects. These agencies will help to bring about the complete reconstruction of which we have been speaking. It is especially important that we make the most of the existing public-school system, for it is this very system that should serve the real needs of the people. The real needs of the people are not alone the arts by which they make a living, but the whole range of their customary activities. As the home is the center of our civilization, so the home subjects should be the center of every school.—*Report of the United States Country Life Commission.*

In the list of available publications of the Health of Animals Branch, published in the December number of THE AGRICULTURAL GAZETTE, Bulletin No. 1, Actinobacillosis, by Charles H. Higgins, B.S., D.V.S., Pathologist, was omitted.

On page 37 of the January number of THE AGRICULTURAL GAZETTE the statement "This organization has brought about a remarkable improvement in the quality of the products turned out by the members of the Society, to such an extent that they won 20 prizes out of a total of 24 in Montreal," should read "that they won 20 prizes out of a total of 24 in Toronto." The statement, "The State has been urged, by several witnesses, to take over the management of these associations," should read "The State has been urged, by several witnesses, to supervise these associations."

On page 65 of the January number of THE AGRICULTURAL GAZETTE the sentence, "The maximum Provincial Grant to each Agricultural Society for the three crops totals \$150, on condition that the society supplements this with \$110, whose expenses are all paid by the Ontario Government", should read "The maximum Provincial Grant to each Agricultural Society for the three crops totals \$150 on condition that the Society supplement this with \$76. The number of Field Crop judges required this year was 110, whose expenses are all paid by the Ontario Government".

PART IV.

Special Contributions, Reports of Agricultural Organizations, Notes and Publications.

THE ONTARIO CORN GROWERS' ASSOCIATION.

BY J. W. NOBLE, B.S.A., DISTRICT REPRESENTATIVE, ESSEX, ONT.

FROM February 9-12, 1915, the seventh annual Ontario Corn Exhibition will be held at Chatham. At this exhibition will be presented a fair representation of the corn grown by over one thousand farmers in the corn growing belt of southwestern Ontario who are members of the association. In February, 1909, the initial show of the association was held and since that time the quality as well as the quantity has improved each year. The seed corn belt of Ontario includes the counties of Essex, Kent and Lambton with parts of Middlesex, Elgin and Norfolk.

"Better Corn and More of it" is the motto of this strong organization, the object being to improve the quality of the seed corn supplied to the growers of ensilage corn, at the same time increasing the amount of seed grain grown per acre.

EXPERIMENTAL WORK.

In the spring of 1914, upon the recommendation of the corn growers, the Ontario Department of Agriculture commenced a series of experiments in the different counties of Ontario. Through the agency of the county representatives the provincial department will test the seven varieties standardized, under the same conditions, to ascertain the most profitable varieties for the

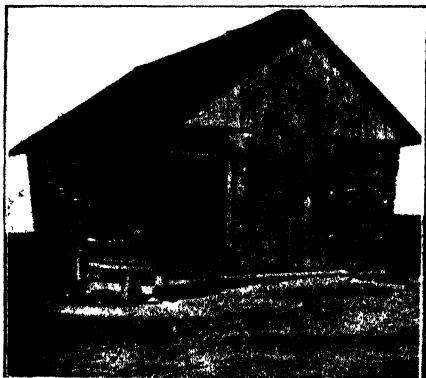
different zones of Ontario. These varieties will be compared with a view to yield, date of maturity, and suitability to the soil of the different sections. Each representative will be supplied with sufficient material to plant seven acres of corn, and reports upon the results will be collected and compiled.

As germination determines to a great extent the value of seed corn the members of the association are conducting experiments in different methods of drying corn after it is husked and gathered from the field. The former method of drying corn in a broad low crib has not been very satisfactory as climatic conditions are found to injure the germinating power. Rack drying and peg drying are being carried on with the best results. The underlying principle of these systems is to allow the air to circulate around every cob so as to thoroughly dry each kernel. This drying eliminates the subsequent danger of being injured by frost. Experiments upon the effect of shipping corn under different conditions are also being arranged.

IMPROVEMENT BY SELECTION AND BREEDING.

Corn breeding is receiving its due consideration in this improvement campaign. The seed growers through patient and careful selection are im-

proving the quality of the corn produced each year. Various methods are used to accomplish this aim, but the seed plot method seems at present to be the most popular. A great many growers are conducting the system of ear-to-the-row selection. The best ears from the crop are saved and each ear is planted in a separate row. This plot is cultivated in the best possible manner and at the time when the first silk appears the tassels are broken from any stalks that do not show a large ear being produced. In this way the unproductive tendencies of these stalks are eliminated. By selecting the best ears from the most pro-



A CORN DRYING CRIB.

This is the type of corn crib most prevalent in the corn growing sections in southwestern Ontario. Germination tests from these houses are not always satisfactory.

ductive rows of this plot for planting the following year, the yield is considerably increased.

Still another method of improving the quality of the seed has recently been evolved which goes even a step farther than the requirements of the Canadian Seed Growers' Association and is a development of the same method as the one required by them. It is the ear-to-the-row test, preserving one-half the ear to be sown or discarded the following season. The ears are numbered, one-half of each ear is shelled, kept separate and

planted in a row by itself, the rows being numbered to correspond to the numbering of the ears. The results of each row are ascertained and the half ears which did not produce a good yield of standard ears are discarded. In the following year only the ears which gave the best results are planted in the seed plot, which means that the rows all produce well, and consequently the seed produced is greatly improved, for the high yielding corn is cross fertilized with high yielding corn only, which removes one of the handicaps which has for so many years impeded the progress in increasing yields and in seed improvement.

At the annual convention in connection with the exhibition prominent scientists will deliver addresses upon recent investigations regarding the best methods of cultivation, harvesting, curing and breeding corn. Experiments will be discussed and object lessons drawn from the results. An annual report of the convention contains the reports of convention meetings, and other items of interest to corn growers.

The work of the Ontario Corn Growers' Association may be said to be in its infancy; still a great deal of good is being accomplished which is already yielding its influence upon the corn growing industry of the province.

DIVISIONS OF EXHIBITION.

The exhibition this year is divided into a senior and junior department, and contains also county, township, and semi-provincial classes, as well as a seed and vegetable department. The senior department is open to all who have paid their membership fees. Exhibitors in the junior classes are confined to boys and girls 16 years of age or under.

The following are the standards of varieties adopted by the association:—

DENTS.

WISCONSIN NO. 7.

Ear—Length, $8\frac{1}{2}$ inches to $9\frac{1}{2}$ inches. Circumference, 7 inches to $7\frac{1}{2}$ inches.

Kernel—Colour, creamy white. Indentation, well dented. Rows, 16—18.

Butt—Moderately rounded.

Tip—Well covered. Fairly full.

Cob—Colour, glistening white.

BAILEY.

Ear—Length, $7\frac{3}{4}$ inches to $8\frac{1}{2}$ inches. Circumference, $6\frac{3}{4}$ inches to $7\frac{1}{4}$ inches.

Kernel—Colour, yellow cap with reddish tinge lower. Indentation, nicely dented.

Rows—16—18.

Butt—Moderately rounded.

Tip—Full. Well covered.

Cob—Colour, dark red.

WHITE CAP YELLOW DENT.

Ear—Length, $7\frac{3}{4}$ inches to $8\frac{1}{2}$ inches. Circumference, $6\frac{3}{8}$ inches to $6\frac{7}{8}$ inches.

Kernel—Colour, cap white, remainder yellow. Indentation, fairly rough.

Rows—14—16.

Butt—Moderately rounded.

Tip—Well covered, slightly tapering.

Cob—Colour, red or white.

GOLDEN GLOW.

Ear—Length, $8\frac{1}{4}$ inches to $9\frac{1}{4}$ inches. Circumference, $6\frac{1}{2}$ inches to 7 inches.

Kernel—Colour, deep yellow. Indentation, medium.

Rows—14—16.

Butt—Moderately rounded.

Tip—Slightly tapering.

Cob—Colour, cherry red.

FLINTS.

LONGFELLOW.

Ear—Length, $10\frac{1}{2}$ inches to $11\frac{1}{2}$ inches. Circumference, $4\frac{1}{2}$ inches to 5 inches.

Kernel—Colour, deep golden yellow.

Indentation, none. Rows, eight.

Butt—No larger than $\frac{1}{3}$ distance up ear.

Tip—Slightly tapering and well covered.

Cob—Colour, pure white.

SALZER'S NORTH DAKOTA.

Ear—Length, 11 inches to 12 inches. Circumference, 5 inches to $5\frac{1}{2}$ inches.

Kernel—Colour, pearly white. Indentation, none. Rows, eight.

Butt—No larger than $\frac{1}{3}$ distance up ear.

Tip—Slightly tapering and well covered.

Cob—Colour, pure white.

COMPTON'S EARLY.

Ear—Length, 12 inches to 13 inches. Circumference, $5\frac{1}{2}$ inches to 6 inches.

Kernel—Colour, deep golden yellow. Indentation, none. Rows, twelve.

Butt—No larger than $\frac{1}{3}$ distance up ear.

Tip—Well covered.

Cob—Colour, pure white.

IMPROVED TYPES OF SEED CORN.

BY L. H. NEWMAN, B.S.A., SEC., CANADIAN SEED GROWERS' ASSOCIATION, OTTAWA.

THE Canadian Seed Growers' Association was organized in 1904 for the purpose of encouraging the production and more general use among Canadian farmers of better seed of the different classes of farm crops. From the beginning the corn crop received due attention and a number of corn growers enlisted as members with a view to taking up systematic work in corn improvement. The need for such work at the inception of this organization was strikingly apparent. In the earlier maturing Flint varieties of corn the situation was not so

unsatisfactory, but in the Dent varieties chaos reigned supreme. The number of different so-called varieties and strains grown were legion, and these were all more or less composite in character. As is well known, corn cross-fertilizes readily, with the result that in the average corn field there may be found many different combinations which manifest themselves as different strains. These strains in turn become crossed with each other and the mixture becomes more and more composite until we have a motley mixture of types. This is exactly what happened in the

corn fields of Canada and the condition depicted was the condition in which we found the corn situated when the Association came into being a decade ago.

As a result of the above situation in part at least, Canadian grown seed corn was not held in high esteem by the seed dealer. Not only did he find it difficult to obtain from year to year, seed of uniform type and which would behave similarly under given conditions, but he found that the germination was also variable and unreliable. In order to secure seed which was at least of high vitality, he relied chiefly upon the American market, particularly the middle Western States for his supply. Unfortunately however the types of corn grown in those warmer regions mature too late in most parts of Canada to make even good ensilage although they produce a large, luxuriant foliage and high tonnage. The production in Canada, chiefly in the Lake Erie counties, of types of corn suited for ensilage production in the great dairy districts of the more northern and eastern zones has therefore come to be one of the important considerations of the Association. The accomplishing of this task has proven to be slow and arduous, surrounded as it is with many difficulties. It is encouraging to note however that progress is gradually being made although much yet remains to be done. The use of Canadian grown seed corn is becoming more and more general as its superiority becomes known and as the seed growers themselves become better informed as to how to grow and care for the seed produced.

ELITE STOCK SEED.

In the prosecution of its task, the Association has adopted a certain system of seed growing, the first aim being to produce a quantity of seed of a desirable and constant type which will be suitable for propagation for the trade. This class of seed is

known as "Elite Stock Seed." In the production of this seed a so-called Hand-selected Seed Plot or breeding plot is employed. This plot ordinarily must be isolated about a quarter of a mile from other varieties in order to prevent its becoming inoculated with foreign pollen. A plot of 20 rows and 500 hills in a row is the size recommended for the average grower. Twenty of the most uniform ears are chosen to plant this plot, each row of which is planted with corn from a single ear. Corn for the following year's seed plot is then chosen from the best rows. This system being a continuous one, a cumulative effect is produced, the less valuable strains being gradually eliminated while those possessing superior qualities are brought together. By means of this system a number of superior and distinctive types have been produced and are now being propagated quite extensively.

SEED CORN CENTRES.

Until recently, each member of the Association working with corn has been required to operate annually a seed plot such as that described in order that he may produce his own Elite Stock Seed. This requirement, while having certain educational advantages, unfortunately has resulted in the multiplication of different types rather than in their diminishment. The reason for this is found in the variability of corn due to the ease with which it crosses, rendering it easy for the breeder to develop or approach the type which he regards as his ideal. As might naturally be expected therefore, we have almost as many types as we have breeders. In so far as this concerns the crops of the breeders themselves, this situation is not a serious one, but for the buying public it is decidedly objectionable, the supply of seed corn of a given type grown under this system being limited and uncertain. What is wanted by those who buy seed corn is a relia-

ble source of supply of certain proven types from year to year. In order to meet this demand the regulations of the Association have been amended so as to permit of the organization of "seed corn centres," that is groups of growers who agree to propagate a given type of Elite Stock seed which has been produced by one of their number under careful supervision and control. By reason of this arrangement the one breeder regulates the type propagated by the other members of the Centre, the latter being simply propagators rather than breeders. This idea is a relatively new one, but bids fair to revolutionize the seed corn business. The first seed corn centre organized is located near Amherstburg, Ont., and is known as the River Front

Seed Corn Centre (T. J. Shepley, of Amherstburg is secretary). This Centre is operating with Wisconsin No. 7 corn, the Elite Stock seed being produced by Mr. Shepley and a quantity supplied to each of the members of the Centre each spring at a given price per bushel. This spring (1915) several hundred bushels of high class seed corn of a uniform type are being offered for sale by this centre at a reasonable price per bushel and those who buy this seed and find it suitable for their conditions will find this centre a source of supply of a similar type from year to year. Other corn-centres are also organizing along similar lines and ere long a large quantity of reliable seed of a number of leading and distinct strains will be available.

CORN AS A PREPARATION FOR WHEAT.

IN the series of articles on the conservation of soil moisture, that appeared in the November issue of THE AGRICULTURAL GAZETTE, it was brought out by different investigators that in districts of light rain fall a well cultivated corn crop proved a better preparation than a root crop, or even fallow, for wheat the following year.

A number of recognized authorities on soil physics in the following letters shed light on this somewhat puzzling question.

W. H. DAY, B.A., PROFESSOR OF PHYSICS,
ONTARIO AGRICULTURAL COLLEGE.

My attention has been called to statements in the November GAZETTE to the value of a corn crop as a preparation for wheat the following year. I have given these matters some thought and so far as I can see Mr. Fairfield, on page 880, has instanced two factors which undoubtedly played a large part in giving the yields which he mentioned at the bottom of page 880, which showed the following:—

	1914		1913	
	bu.	lb.	bu.	lb.
Yield of wheat after turnips 1	3	15	55	
Yield of wheat after corn...22	12	33	20	
Yield of wheat after summer fallow..	15	14	26	55

These two factors are:—

1. Turnips make probably their heaviest draught on the soil moisture late in the season, while the corn uses little, if any, during the latter part of the season.

2. The use of manure at different times on the plots in question. The corn land had manure just previous to the corn crop. The summer fallow had no manure recently, while the turnip land had manure sometime earlier than the corn land.

There is a third factor not mentioned by Mr. Fairfield, which I think must play a part. Corn is a deep-rooting plant and during the year following corn there are a great many root fibres in the soil in a state of partial or complete decay. These fibre channels it seems to me would form very active capillary channels.

Since moisture is the predominating factor in crop production, especially in Western Canada, we would under these circumstances expect that wheat after corn would unquestionably give better results than wheat after turnips, but on the fallow land during the year it was

fallowed the loss of soil moisture we should expect to be much less than on the corn land, and it is doubtful if we should expect better results from corn land than from fallowed land, and I am personally doubtful whether, if the manurial treatment were the same, we should get the results given in the table. Of the two factors mentioned as applying to "Corn vs. Fallow Land" I consider that relating to manure greater than the other.

Outside of these three factors I cannot see what else could account for the difference.

Now as to the case of "Corn vs. Wheat" on page 875, I think the difference noted is accounted for by the factors above mentioned.

JOHN BRACKEN, B.S.A., PROFESSOR OF
FIELD HUSBANDRY, UNIVERSITY OF
SASKATCHEWAN.

For two years in succession we have noticed that crops following corn give very favourable returns as compared with fallow and much larger yields than similar crops sown on fallow or spring plowed stubble. Both last year and this year we had opportunity to observe the effect of corn and turnips preceding wheat and alfalfa. Our observations were similar to those referred to in the November GAZETTE. The yield following corn was much greater than that following turnips and the favourable yields following corn we think are due to four factors:—

1. Corn requires less moisture per lb. of dry matter than any of our other commonly grown crops.

2. In this country the draught of corn upon the soil ends at the time of the first fall frost while in the case of turnips their greatest growth is made after this time.

3. The intertillage given the corn crop develops available plant food and makes the soil solution more dense, thereby requiring less moisture per unit of dry matter produced in the succeeding crop.

4. In northern climates and in short seasons the yield of corn is light and the supply of moisture is therefore not heavily drawn upon.

It should be pointed out however, that the yield of corn last year was very light, the average being about 8 tons green weight per acre. The average yield of wheat on fallowed land this year was 30 bus. 15 lb., wheat following potatoes yielded 25 bus. 10 lb.; wheat following corn in one portion of the field yielded 25 bus. 20 lb., and in another 30 bus. 25 lb.

In future we shall be glad to give more positive data on this question since we have nearly 120 rotations under way. There is no doubt but that where corn

can be grown and used to advantage it will lessen the frequency of the fallow.

ALFRED ATKINSON, B.S.A., PROFESSOR OF
AGRONOMY, MONTANA AGRICULTURAL
COLLEGE.

During the past six years, we have rather carefully looked into the question of intertilled crops as substitutes for dry farm fallow, and have carried on a little work on our own dry stations.

As to the probable reason why the Lethbridge Station was able to get a better crop of wheat after corn than after fallow or turnips, the following findings may be of interest:—

In Memoir No. 1 of the Cornell Station, published by Lyon and Bizzell, in 1913, on "Some Relations of Certain Higher Plants to the Formation of Nitrates in Soils," is reported the results of nitrate determinations with various crops. The data given support the general conclusion which is stated, that, "during the most active growing period of the maize crop, nitrates were frequently higher under maize than in cultivated soil bearing no crop." The authors state that, "this phenomena may be accounted for on the assumption that nitrate formation is stimulated by some processes connected with the active growth and absorbing functions of some higher plants, particularly maize, although there are indications that the maize plant obtains a large part of its nitrogen in some form other than nitrates; the combination of these conditions may account for the very high nitrate content of soil under maize."

Under conditions of light rainfall, the development of available nitrogen in the form of nitrates has a marked influence on the economical use of the moisture supply. Work by Thom at the Washington Station at Pullman, Washington, shows that the available food supply in the soil essentially governs the amount of moisture that will be used in the production of a crop. The denser the plant food solution the less water required to convey the food constituents up to the plant for growth. For the same reason that it takes more skim milk than whole milk to get the required nourishment into a calf, so it requires more water to convey the elements of growth to a crop when the plant food solution is thin than where it is more dense. Active nitrate development is stimulated by corn, and ample nitrates or available nitrogen in the soil is a favourable condition for the succeeding crop.

The relatively small wheat yield after turnips is doubtless due to the higher moisture demand of crops like turnip, and the absence of any nitrate forming effect by this crop. In Bulletin 284 of the

Bureau of Plant Industry of the United States Department of Agriculture, under the title "The Water Requirement of Plants," by Briggs and Shantz (1913), it is shown that rape requires 441 pounds of water for each pound of dry matter; sugar beets 377 pounds of water for a pound of dry matter; and Northwestern Dent Corn (an early western grown variety) requires 368 pounds of water for a pound of dry matter. Turnips are not included in the report, but they are doubtless very similar to a crop like rape. If, now, turnips do not stimulate nitrate growth, as is evidently done in the case of corn, and they require

more water for growth and grow later, as is commonly the case, we ought not to expect as good crop growing conditions after turnips as after corn or fallow.

Unpublished data in this department point to the same conclusion as is reached by Lyon and Bizzell in their work at Cornell.

I am much interested in the November issue of the AGRICULTURAL GAZETTE. The soil moisture discussion and results are very much worth while, and a publication of this sort ought to make a substantial contribution to better agriculture in Canada.

CONFERENCE ON RURAL LIFE AND WORK.

THE Conference on Rural Life and Work conducted at the Ontario Agricultural College January 29 to 31, 1915, is the beginning of an organized movement to face the Rural Problem honestly and squarely in the province of Ontario. The convention was promoted by the Young Men's Christian Association of the College for the purpose of drawing from the practical experience of those present the advantages and disadvantages under which the farmers and their families carry on their vocation, and to formulate plans whereby the present disabilities of the farming community may be ameliorated or removed altogether.

About six hundred persons were present at the main sessions of the conference, including graduates and other ex-students of the College, men and women from different rural sections of the province who are earnestly interested in various phases of the problems discussed, and students at present in attendance at the Agricultural College and Macdonald Institute.

The Honourable James Duff, Minister of Agriculture for the province of Ontario, was present during one session and expressed his hearty approval of the great work with which the conference was attempting to

grapple. He touched upon a number of the economic and social difficulties and disadvantages which the average farmer of the present day is compelled to face and trusted that the convention would be productive of much which would tend toward the solution of some of them. He deplored the condition of rural depopulation which has influenced Ontario for many years and gave it as his opinion that the solution of the Rural Problems would not be complete until the rural population were brought to some state of permanency.

Dr. John Brown, Jr., Secretary of Rural Work Department, International Committee of the Y.M.C.A. of New York, explained the work of the Y.M.C.A. in helping country life in the United States. The movement was begun ten years ago. It was recognized that the country problem was an exceptionally peculiar one and demanded different methods entirely from other branches of Y.M.C.A. work. To develop the situation successfully the Field Secretary must be essentially rural-minded and must understand rural problems through experience. A residence and voluntary leadership is then trained to carry on the work permanently and great success has been achieved in following this method. The whole question appears to hinge on the matter of competent leadership.

Y.M.C.A. rural work is not limited to the social, athletic and religious activities of boys and young men, but extends itself to the arousing of community consciousness in social, business and health enterprises, the bringing together of pastors in Ministerial Associations and teachers in teachers' associations, and in bringing all these things together into co-operative effort. In this way the Y.M.C.A. believes that it interprets Christianity for rural communities in practical terms.

Mr. E. C. Drury of Crown Hill, Ont., a graduate of the Ontario Agricultural College of fifteen years ago, whose newspaper articles on various agricultural questions are well known throughout the Dominion delivered an address upon the "Attractions and Repulsions of Farm Life." He outlined in an impressive and convincing manner the real joys of country life and the serious difficulties with which every farmer is confronted. Speaking of the crying need which exists for leadership in all branches of rural life, he stated that this is being partially solved by the return of agricultural students to their country homes, most of whom exert a wonderful influence for the social and economic advancement of their various localities. But the supply of these men is thoroughly inadequate for the task, and some organized effort is necessary to meet the situation. Mr. Drury has conducted certain investigations in the matter of rural education and has found as a result that 50 per cent of country boys have never read a book—surely a deplorable state in rural education. Touching on the labour question, he stated that much of the trouble in this connection is caused by the farmers themselves. All farmers need a superior and skilled service and are willing to pay for only inferior labour. In Mr. Drury's estimation many of the country ills result from the fact that average farming is not a sufficiently paying business.

THE ECONOMIC QUESTION.

The economic question in its relation to rural life was discussed at length by W. C. Good of Brantford and a number of other speakers, and many important points were raised, some of which were:—Rural credits to increase the production of the farm; a readjustment of taxation; the development of co-operation; the adoption of representative legislation; a mortgage system whereby mortgages may be extinguished in a reasonable term of years; book-keeping and business management on the farm; tariff on agricultural implements, etc., national banks; business instinct of farmers; capital required for farming.

THE LABOUR QUESTION.

This is one of the most vexing problems in rural Ontario. Interesting points mentioned in this connection were:—Three view points of farm labour—that of the farmer, that of the employee, and that of the son; wages are not sufficient to secure efficient service; the average farmer cannot keep a man the year round; the ordinary farm hand cannot look forward to an ambition; Canadian versus foreign farm help; accommodation for hired help: married and single hired men.

THE QUESTION OF EDUCATION.

The matter of education for country children has puzzled educational authorities in Ontario for many years. The problem is a big one and called forth a lengthy discussion. The following are some phases of the question which received attention:—What the Ontario Department of Education is now doing for rural education; school gardens and fairs; work of the county representatives; summer courses for rural teachers at the Ontario Agricultural College; rural school attendance; similarity of curricula in urban and rural schools; male and female teachers; teachers'

salaries; changing of teachers; social life of teachers; teachers' organizations; trustees' organizations; pupils' organizations; practical demonstrations on best farm practices; report of the Royal Commission on Technical Education.

RELIGIOUS FACTORS IN COUNTRY LIFE.

The discussion brought to the surface many times the evils of sectarianism in the country. The existence of numerous religious sects in rural districts results in many social divisions all of which are weak. Co-operation in the churches, or better still, church union, probably would do much toward solving social problems. Rural pastors, Sunday schools, Young Peoples' Associations, the church and athletics, were some of the main points considered in this phase of the rural problem.

THE PLACE OF WOMAN IN COUNTRY LIFE.

The session devoted to this subject was one of the most interesting of the conference. A paper on "The Advantages of Country Life over City Life from a Country Woman's Standpoint," by Mrs. Brethour of Burford, brought out many of the bright sides of rural life as well as many disadvantages under which the country housekeeper and mother has to labour. The work of the Women's Institute was clearly outlined and commended. The discussion which followed Mrs. Brethour's paper was conducted by a number of young ladies of Macdonald Institute who were born and bred in the country, and who gave instances of their own experience in problems which farm women are compelled to face. The evils of sectarianism; monotony of rural life for the farm girl; the farm water supply; education in domestic science, constituted a number of the main topics considered. The necessity of keeping the farm girl in the

country is as pressing as the farm boy problem.

RESOLUTIONS.

The following resolutions were placed before the conference and were adopted after discussion and deliberation:—

RESOLVED, that we record our belief that if the rural problem of Ontario is ever to be solved it must be done by those men and women resident in the rural districts who have been born and brought up in these districts.

RESOLVED, that in the opinion of this conference the taxation on farm industry in the forms of legalized monopolies, high rates of interest and inflated values of urban land areas, are detrimental to that industry and to the country as a whole; that a lowering of the tariff on farm implements and the taxation of land values engage the immediate attention of the governments of Canada; and that practicable systems of farm credit and of general co-operation form part of the program of adult education in rural districts.

RESOLVED, that from the facts brought out during the conference, it is our opinion that the district representative work, promoted by the Ontario Department of Agriculture is of supreme importance and value to the farming communities of Ontario, and that we hereby heartily endorse the steps already taken by the Government in its establishment and recommend its extension throughout the province as far as possible.

RESOLVED, that we recommend to the authorities of the Ontario Agricultural College that instruction in business management and accounting, marketing and farm economics be included in the regular course, and that under the direction of the Department of Rural Economics, an economic survey of the counties of Ontario be instituted.

WHEREAS, the educational standards and the appreciation of education amongst the country people generally are insufficient for the development of the type of citizenship required to meet adequately Ontario's rural needs, and whereas our system of education has hitherto failed to meet those needs, resolved that the time has arrived for the serious consideration of readjustments of the program of studies followed in country schools at present; and that for the education of country boys and girls past public school age, the establishment of Country People's or Township High Schools, possibly in connection with schemes of consolidation, should be carefully considered.

WHEREAS, the needs for agricultural education for the one and a quarter million people residing in the rural communities of Ontario, to be met adequately, would seem to require in time, large forces of instructors or leaders specially trained at the Agricultural College, resolved that the Agricultural College in order to meet this service might well be freed in time from the supposed necessity of training young men as so-called practical farmers, and that this service should be taken over by other Agricultural Schools that might be established in other parts of the province.

WHEREAS, through rural depopulation in Ontario to-day, the attendance of a large number of rural schools has become so small as to make efficient public school education impossible, resolved that this conference is of the opinion that the establishment of consolidated schools would furnish a practical solution to the difficulty, and also would bring a high school education within the reach of every country boy and girl of the province.

RESOLVED, that we, deploring the conditions of overchurching in the rural districts, do hereby endorse the movement for union of the Evangelical Churches and strongly express the opinion that the Church's relation to the solution of the Rural Problem depends upon the consummation of church union now under consideration.

RESOLVED, that in view of the fact that if ever the Rural Church is to take the place of leadership in rural life which she should, a new class of ministers, who definitely choose as their life work the rural ministry, must be secured.

RESOLVED, that we recommend that the theological colleges of Ontario should im-

mediately plan some campaign of laying the claims of the rural ministry before theological students and prospective students, preferably those who have been born and bred in the country and are in other respects fitted to lead in country life.

RESOLVED, that we recommend to the authorities of the Ontario Agricultural College the establishment of a summer school course for rural pastors and religious and social workers.

WHEREAS, there are specific problems peculiar to the young people in rural Canada in the solution of which the Y.M.C.A. and Y.W.C.A. are specially qualified to assume the leadership, resolved that we recommend that the National Councils of these two organizations be urged to organize departments for rural work immediately, and that, where possible, the work of these organizations be promoted simultaneously.

RESOLVED, that we recommend that the committee which promoted this conference be asked (if willing to undertake the task) to call together duly accredited representatives of all the Provincial or Dominion rural organizations, Government Departmental Representatives and representatives of all other organizations (so far as they are known) which are working for rural betterment, for the purpose of considering the feasibility of forming a Federation for Rural Progress in Ontario, that the work of such a federation might be to promote this conference as an annual event and also to promote a Community Efficiency Conference of one week's duration at some time during the summer, to which Rural Life Leaders of all kinds may be invited.

AGRICULTURAL INSTRUCTION FIELD AGENTS.

DURING the past year the Department of Education of Ontario employed five Field Agents in agricultural education. They worked under the direction of Professor S. B. McCready, Director of Elementary Agricultural Education.

The agents were young men who had taught school and were taking the regular course at the Ontario Agricultural College. The work was financed out of appropriations to the province of Ontario under the Agricultural Instruction Act. Professor McCready has supplied the GAZETTE with reports of four Field Agents, from which the following extracts were taken:—

S. E. PERCIVAL —

As your Field Agent for Agricultural Education in the counties of Renfrew, Lanark, Carleton, Russell and Prescott, from which only fifteen schools made application for assistance in qualifying for special grant, my work has been largely one of propaganda. Keeping in mind the advisability of having agricultural instruction introduced as the result of a feeling of need within the section, I have taken advantage of every opportunity of explaining to the people the aims and purposes of Agricultural Education.

Everywhere this information has been well received by teachers, pupils and parents. The old objections—crowded time-table and unqualified teachers—seem to be fast disappearing. Parents and teachers are now coming to recognize the short-cut obtained in all subjects by making instruction real and applying knowledge as soon as acquired. Teachers

realize that a long needed change has come into matters educational, that education to fit children for present day life must be business-like and practical; that children must be taught to "find their hands" and apply their thoughts. I have found teachers as a rule ready to prepare to meet these new demands either by taking special courses or by acquiring necessary information in other ways.

Invariably I have found the teacher, pupils and parents in sections where the district representative has already made himself known to the school, easier to approach and more ready to consider the permanent establishment of agricultural instruction than in sections where no agricultural agencies have yet exerted influence on the schools.

In doing propaganda in new schools, I notified the Inspector and the district representative of what time I should be able to be with them to arrange a series of meetings, each including two or more school sections. This matter was made known to the local papers and the meetings were usually well attended, in some cases there being a short additional programme provided by local talent to supplement the business part of the meetings.

In describing the method of inspection followed I do not think that I can do better than tell of a typical day at a typical school. After a drive of about nine miles I arrive at the school, get acquainted with the teachers and pupils and spend the remainder of the forenoon examining the record books, garden plots, grounds, etc. From 1.30 to 2.45 I have a talk with the children, giving suggestions on experiments to perform, keeping records, how to get the folk interested at home. At recess the village doctor and the village preacher visit the school, and, when after recess I have given further suggestions intended to help teacher and pupils and explained how forces outside the school should be utilized in promoting the work of the school, these two senior visitors express their views on agricultural instruction.

After 4 o'clock all engage in a social chat and about 5 the children have tea ready on the lawn. When tea is over we follow the teacher to the ball ground where we enjoy a game of ball, the doctor, the preacher and teacher taking an active part and the children following their lead. About 7 p.m. the parents and young people begin to arrive, and the district representative, arrives also. The evening meeting is well attended and several very instructive and inspiring speeches are delivered, not the least of these being given by one of the oldest men of the section, who has driven in several miles to be present. This was not always the course of procedure, but is typical.

R. H. ABRAHAM—

The district covered comprised the counties of East and West Kent, South and North Essex and West Lambton and West Elgin.

HOW I INSPECTED SCHOOL.

1. Inspected library and noted the agricultural books; examined register, noted the lessons taken up.

2. Set the children a composition to write on the lesson taken up or held oral examinations.

3. Took the children to the garden and made each child explain what they were learning or trying to learn from the garden plots. If they had no definite object in growing plots I tried to impress on the children and the teacher that they must know before planting what they are trying to learn or they would learn little.

4. Taught a lesson on agriculture by taking the children to an orchard, barn-yard or wherever it might be and there have the lesson.

In many of the new schools the pupils had no very definite idea of the work. Vegetables, grains and all kinds of produce were planted in the garden. The experimental and demonstration idea was replaced by the idea that a successful garden consisted of good specimens of lettuce, radish and flowers.

In the older schools, where agriculture has been taught the year before and where the school has been visited by the director of elementary agriculture or by the field agent, the children in most part knew the reason they were growing the produce, namely, to find out something regarding the vegetable or grain that they did not know. The lessons in those schools were much better taught this year and the records of children and teacher better kept than last year.

E. L. SMALL—

My territory was the nine south-eastern counties, extending east from Hastings along the St. Lawrence. Apart from this territory I worked in Oxford, Haldimand, Welland and Lincoln counties.

The only schools visited were those which were teaching agriculture and those which were anxious to know more concerning the subject; in either case the teacher was notified several days previous, thus enabling her to make the best arrangements with the trustees or people for our visit.

Sixty schools were visited. Fifty of these were teaching agriculture throughout the year and conducting a home or school garden or children's home projects as an aid in the teaching.

The first duty while inspecting schools was to see that regulations governing the teaching of agriculture were understood and carried out; that lessons in agriculture were taught one hour per week throughout

the whole year, that teacher's and pupils' records of work were being properly kept and that the lessons taught were of interest to the pupils of that community. An oral test examination was generally given to the pupils, on the work covered, or short essays were written on the various topics studied. In each school I taught an agricultural lesson, using the pupils' interests as a choice of subject and in all cases used concrete material.

Many of the schools just starting the work have not fully grasped the object of the department. To many the teaching of agriculture means a home or school garden, and these as merely a place for plants to grow, instead of being a well planned experiment to be used as a basis for lessons.

The second summer of work shows a much different school, for teachers are anxious to find out the meaning of the work. In the schools which are doing good work, agriculture is co-related with other subjects; the children have become interested and often suggest and bring material for the lessons. Pupils' progress clubs are formed and the people of the section become interested in the appearance of school and yard.

J. E. MCLARTY—

The district in which I worked was made up of the counties of Halton, Wentworth, Wellington, Waterloo and East Elgin. In these counties I visited the following number of schools: Halton, 6; Wentworth, 9; Wellington, 5; Waterloo, 4; and East Elgin, 18. All of the above schools were entered as qualifying for the special grants as offered by the Department of Education.

In my work the idea was to co-operate as much as possible with the school inspector and the district representative.

In inspecting the work of the school, the teachers' and pupils' records were carefully examined, oral and written tests were given on the work, the garden was visited by all and the pupils asked to explain the experiments which they were carrying out in their respective plots. In nearly all cases I taught a lesson on some topic to illustrate the intention of the department also showing wherein correlation with other subjects could be brought about.

I find that the teachers are a band of willing workers and are very anxious to receive new ideas.

In the schools which have only begun the work this year the work has been mostly along school improvement, levelling grounds, repairing fences, cleaning school, growing flowers, planting trees and conducting a small garden with a few simple experiments, mostly variety tests and elementary work taught in class. Many schools have made marked changes in the appearance of the school and grounds and in cleanliness and order in the school room.

Schools that have been carrying on the work last year are working out more

extensive experiments, each pupil having an experiment which is to demonstrate to the section some particular object. Progress Clubs have been formed and club meetings or debates are held at which the pupils tell what they have learned by experimenting or reading or seen done on their own farm. Many of the members become very good speakers and many clubs write to similar clubs in this way effecting an interchange of ideas and results of work undertaken and accomplished.

Besides visiting schools I gave a few lessons at the Model Schools at Sturgeon Falls and Port Arthur. My work in these schools was taken mostly after four o'clock so as not to interfere with school work. I adhered as closely as possible to the subjects outlined by the department to be taught at the model schools.

I also held two short courses for public school pupils. The courses were each of three days duration. At one school 18 pupils attended, and 30 attended at the other. Here I took up practical work, such as judging grain, sheep, dairy and beef cattle, identification of weeds and weed seeds, breeds of poultry, colony houses and chicken houses, chicken feeds, drainage, and diseases of plants, grains, etc. In each case we had the actual material at hand and the pupils enjoyed work which was mostly outdoors.

R. A. FINN—

During the past summer my work was in the counties of Durham, Northumberland, Victoria and Peterboro, and the districts of Haliburton, Muskoka, Nipissing, around North Bay, and Algoma, mostly around Sault Ste. Marie.

When I arrived in each county I notified the people through the local papers that I was in their locality and would be pleased to have meetings, visit schools, interview school boards, etc. I visited each inspector and district representative and through them got in touch with interested men and agricultural societies, women's institutes, etc. A night meeting was held whenever the people desired it, and in one week I held five meetings on five consecutive nights, in which meetings eight schools were represented. This was in the district around Sault Ste. Marie.

In my counties, 19 schools were teaching agriculture under the regulations, several others doing some work in agriculture.

On visiting a school, I first gave a short introductory talk to the pupils telling of some work in other schools; saw the grounds and equipment, tools, etc., and taught some new games. Next I taught a lesson on some practical subject having the material on hand, then looked over the pupils' and teacher's records and set a short oral or written examination on the subject, recorded by the teacher in the back of the register. A report was then written and sent to the department.

GROWING FOOD ON VACANT LOTS.

THE following statement of the work carried on in 1914 on vacant city lots in Regina has been prepared by W. W. Andrews, the Chairman of the Committee:

"Our method of handling the vacant lots is by a committee of which I am chairman. Our secretary finds out from owners if they are reasonably sure that they will not build on their land during the coming season, and if they are willing to let us have the land for our purposes.

"Then we arrange to plough and harrow them. This costs us 90 cents per lot. (It cost us much more at first). We charge \$2.50 for the use of lot, plowing and harrowing and we give some flower seeds to be sown in the 10 feet near the street. Some of the lots were very beautiful. We formed a co-operative society among the gardeners and they bought their seeds co-operatively. We carried on a series of lectures and talks on the conditions of success in Western gardening. These were held in the school houses and were the first social centre work in the school houses. These meetings were attended and the discussions were very interesting. We pay our secretary \$50 for his trouble.

"We have now 160 lots ready for the spring. We had some city property which is now used by the city for nursery purposes. Next year we expect to add a large number of lots to our list.

"We were able to run a small market of our own—co-operatively managed and this move led with the co-operation of the ladies association to the re-opening of the city market.

"We hope to reduce somewhat the fee of \$2.50. It is very small considering the results the gardens yield.

"I had one garden and so also had some others of our committee. My little 25 foot lot kept our table supplied all summer with abundance of green stuff, lettuce, Swiss Chard, spinach, peas, beans, tomatoes, corn, onions, carrots, turnips, celery, potatoes and cabbage, enough to do us all winter. The soil here is wonderful in its fertility.

"We used the newspapers freely. Our secretary was most indefatigable. The chairman and secretary necessarily do most of the work. Some of the stores gave plants, tools and special seeds at reduced prices to all who presented one of our cards.

"We have decided to recommend all our gardeners who use hot beds and cold frames to eschew glass and to use factory

cotton instead. It costs less, does not grow so hot during the day nor so cool at night. The plants get more air and are in every way harder and stand transplanting better.

"One edge of the factory cotton we tack to the higher side of the frame and the other edge is tacked to a lath or roller. The cotton is in this way easily rolled up and when spread over the frame the weight of the roller keeps it in place. Lath may be used as rafters to keep it from sagging during a rain and injuring the plants."

Dr. C. C. James, Agricultural Commissioner for Canada, in discussing this topic said:

"This task is not limited to the farmers. There is a task laid upon all towns and cities. These have been growing and expanding, extending their boundaries, until to-day there must be, at least, one hundred thousand acres lying idle, unproductive, but cultivable in our towns and cities. Living nearby are tens of thousands out of work. Schemes have been suggested of taking the landless men out to the manless lands to grow wheat. That would probably cost \$2 to grow \$1 worth of wheat. It would not be economical—a waste of men and money.

"Why take these men in thousands to the land to grow crops about which they know nothing when right at their doors are vacant lands that will produce food? Surely the cities can secure the use of this vacant land, and set some of the unemployed at work growing potatoes and other vegetables, crops that require labour all through the summer. Under proper supervision men with little or no farming experience can be used to produce food of this kind. They will be paid for their work and a double purpose served. Every ton of food thus produced releases another ton for export.

"Among the city unemployed there may be many who would gladly help the farmers and who would be of some real value. Schemes for placing men of some farming experience with farmers who need help should receive attention in every city. It seems so easy now to organize committees for relief work abroad. Why not turn some of this organizing energy and enthusiasm into relief at home along these lines. Committees of this kind should have rural representatives on them, including officers of the women's institutes who have recently proved their efficiency."

THE PROTECTION OF BIRDS.

A meeting of the members of the Canadian Society for the Protection of Birds was held at the Royal Canadian Institute, Toronto, on December 16th, 1914. Mr. George H. Carson directed the meeting and called attention to the fact that, while many societies exist in the United States for the preservation of birds, Canada has been behind in the movement, and that this association is the first of its kind in this country. An election of officers for 1914-15 resulted as follows:—President Miss Helen

M. Merrill; vice-presidents, Dr. C. K. Clarke and Mr. S. T. Wood; general secretary, Miss Laura B. Durand; assistant secretary, Miss Day; directors: Col. Fred Macqueen, Mr. George H. Carson, Mr. F. F. Payne, Mr. J. A. Harvey, Mr. Charles E. Fleming, Col. G. S. Ryerson, Mrs. S. T. Wood, Miss B. A. Ewan, Miss A. Munro, Mrs. R. L. Brereton, Mrs. E. A. Miller, Mrs. Allen Baines. It was resolved to apply immediately for incorporation of the association under the name of the Canadian Society for the Protection of Birds.

FUTURITY STAKES FOR PERCHERONS.

THE Canadian Percheron Horse Breeders' Association, two years ago inaugurated a system of futurity stakes for Percheron foals.

The secretary states that it is proving of great benefit in inducing breeders to take good care of their young stock. Entries are made of foals to be shown as yearlings. They must have been bred in Canada and are registered in the Canadian Percheron Stud Book. Two classes are provided, one for males and one for females. An entry fee of five dollars is charged for each foal and to the funds thus provided is added \$500 donated by the Canadian Percheron Horse Breeders' Association, besides contributions solicited from other sources. All moneys except

entry fees are divided equally between the sexes, but entry fees for filly foals go to filly stakes and for stallion foals to colt stakes. The exhibition in 1915 will be held between June 1st and September 15th on the grounds of the Association offering to add the largest sum to the stakes.

Last year the total stakes amounted to \$1,450 of which \$675 was awarded in five prizes for stallions and \$740 in eight prizes for fillies, leaving \$35 in the treasury.

The officers of the Canadian Percheron Horse Association are: Vice-President, Mr. E. A. Davenport, Acme, Alta., and secretary, F. R. Pike, Pekisko, Alta. The late J. C. Drewery Cowley, Alta., was president at the time of his death on December 28th, 1914.

A COUNTY BOARD OF AGRICULTURE.

THE first regular meeting of the County Board of Agriculture for Leeds and Grenville counties was held in December. In a letter to THE AGRICULTURAL GAZETTE, Mr. W. H. Smith, B.S.A., District Representative for the united counties, says:—"The purpose of the organization is to bring the different Farmers' Clubs of the counties into closer touch with each other, and endeavour to have them working on a systematic basis along lines which would tend to mark a decided advance in a given direction. As a result of the first County Board meeting it has been decided to hold a series of meetings during the winter months with the different clubs, where the following subjects:—seeds, cheese, fertilizer, vegetables, co-operation, poultry, swine and dairying, will be discussed. The clubs will hold their meetings in a

series, thus reducing the expense of bringing speakers to a minimum.

"In addition to the regular series of meetings, the Board contemplates holding a standing field crop competition for the county, and expects to establish two centres for the development of registered seed."

The members elected to the executive committee of the Board are: Mr. B. N. Cannon of Crosby Farmers' Club; Mr. J. D. Johnson of Soperton-Oakleaf Farmers' Club; and Mr. Holmes Eyer of Harlem Farmers' Club, with C. F. Rath of Lansdowne, President of the Farmers' Institute, and W. H. Smith, District Representative of the counties as additional members of the Board.

The chairman of the Board is Mr. Holmes Eyer of Chantry, secretary-treasurer, J. D. Johnston of Soperton.

A SCHOOL CHILDREN'S PIG CLUB.

THE High School at Stonewall, Manitoba, has a very efficient agricultural department. It carries on school gardening, manual training, and, during the winter months, a special course is given in agricultural instruction. Poultry, potato and pig clubs have also been added, and a very successful fair held.

To encourage the pig club, on the solicitation of the chairman of the school board, a member of one of the large meat packing firms furnished the money to buy the pigs, carried the investment until the autumn and repurchased the pigs at the highest market price, deducting the actual purchase price. In addition this firm donated \$25.00 in cash prizes.

Five boys secured pigs from their fathers and the school board purchased thirty and gave them out in pairs to fifteen boys. One little girl who had a pig feeding was allowed to join the contest. Each boy got one pig of the same age on May 16th; and on May 23rd the second pig from a slightly younger lot. All the pigs were weighed when given out and a record of the weight,

age, sex and breeding kept. A chart was given to each feeder to record the rations fed. The pigs, which were fed according to directions received from the Department of Agriculture, were weighed at regular intervals.

Although the feeding was done by twenty-two different inexperienced feeders, the gain during the first twenty-seven days was approximately one pound per day. In the second period one pig gained forty-four pounds while its mate gained thirty-seven and a half. A pair of pure bred Berkshires, in the hands of one boy, gained, in twenty-eight days, thirty-five pounds and forty-three pounds respectively and at three months of age they each weighed ninety-six pounds.

Two other pigs weighed within a quarter of a pound of each other, and another pig which made only fair gains in the first month, gained thirty-nine pounds during the second, and so on while the contest lasted as shown by the following table which represents about half the pigs in the contest:

No. on Pig.	Date Farrowed.	Date of weighing out.	Weight, 1st weighing.	Weight June 12.	Weight July 10.	Weight Aug. 14.	Weight Sept. 24.	Age in Days.
X.	April 7	May 16	26	63	100	168	238	170
Y.	" 26	" 16	17	42	86	165	245	152
20	" 7	" 16	17 ¹ / ₂	45	88	128	223 ¹ / ₂	170
19	" 16	" 23	14 ¹ / ₂	29	58	191	167	161
30	" 6	June 12	—	61	96	158	210	171
60	" 6	" 12	—	53	96	161	213	171
26	" 7	May 16	20	37 ¹ / ₂	66	101 ¹ / ₂	142	170
41	" 16	" 23	17	38	67	135 ¹ / ₂	220	161
39	" 7	" 16	17 ³ / ₄	43	78 ¹ / ₂	127	197	170
34	" 16	" 23	23	52	62	121	197	161
11	" 7	" 16	18 ³ / ₄	54	91	129	194	170
49	" 16	" 23	18	38	76	115	159	161
52	" 7	" 16	17 ³ / ₄	56	88	129	166	170
66	" 16	" 23	11	39	65	110	164	161

Mr. Ira Stratton, Chairman of the School Board, has from the expense accounts and ration charts handed in by the competitors, worked out conclusions with respect to the profits made. Most of the boys made a profit. The feeder of Nos. 19 and 20 showed a feeding cost of \$11.97, purchase price \$7.00, expenses at fair and shipping, \$1.20. Profit over all of \$11.96. As this pig won a \$7.00 prize in addition, he proved a very profitable animal.

The boy who fed Nos. 52 and 66 made a net profit over all of \$8.00. A girl competitor made a net profit of \$4.81 on her one pig, and won a prize of \$4.00. She also won a prize in the open competition of the Rockwood Agricultural Society.

A boy whose pigs are not mentioned in accompanying table and who did not win a prize, had a profit of \$8.72. One boy, who fed his pigs in town with reasonable success so far as growth was concerned, found he had a profit of 44 cents. Still another lad had no profit. His pigs were among those indifferently cared for.

Pigs numbered 39 and 34 earned their owner a profit of \$15.85. He made use of rape pasture in his rations. The Berkshires, Nos. 30 and 60 made a total profit of \$13.80, besides winning \$6.00 of the prize money and a special prize.

No. 41 won \$5.00 in prize money. With its mate, No. 26, it earned a profit of \$14.78. These were fed on chop and skim-milk.

EASTERN ONTARIO DAIRY TEST.

A three days' milking test was held at the Eastern Ontario Winter Fair at Ottawa during the second week of January. The championship was won by the three-year-old cow, Mercedes Lady Mechhilde, owned by W.

H. Cherry, Hagersville, Ontario, that gave 203 pounds of milk, testing 5.3 per cent fat. The following records were made by the first prize animals in each pure bred class:

AYRSHIRES.

Age, Months.	Name.	Owner.	Lb. Milk.	Per cent. Fat.	Total Points.
Over 48.....	Adalia VI.....	R. R. Ness, Howick, Que..	153.1	4 0	194.98
Between 36 and 48.....	Redhill's Grey Lass	R. R. Ness, Howick, Que..	142.7	3 8	174.38
Under 36.....	White Floss of Springbank.....	J. Hudson & Son, Lyn, Ont.	147	4.2	174.38

HOLSTEINS.

Over 48.....	Princess Aberkirk Cubana.....	W. H. Cherry, Hagersville, Ont.....	241.	3 5	275 74
Between 36 and 48.....	Mercedes Lady Mechhilde	W. H. Cherry, Hagersville, Ont.....	203.	5 3	326 36
Under 36.....	Pauline Colantha Mercena.....	A. E. Hulet, Norwich, Ont.	191 6	3 9	233 76
Under 24.....	Fayne Segis DeKol.	R. M. Holtby, Port Perry, Ont	165 5	3.0	171 15

SHORTHORNS.

Over 48.	Lady Robins....	W. J. Beattie, Guelph, Ont	178.9	3.9	222.89
Between 36 and 48.....	Butterfly Bloom..	W. J. Beattie, Guelph, Ont.	129.	3 9	170 7
Under 36.....	Braemer Beauty..	W. J. Beattie, Guelph, Ont	85 8	4.4	128.11

JERSEYS.

Over 48.....	Donaldy Lyle	B. H. Bull & Son, Bramp-ton, Ont.....	145.1	5.2	228 24
Between 36 and 48.....	Brampton Bright.. Kathleen	B. H. Hull & Son, Bramp-ton, Ont.....	109.4	4.8	163.77
Under 36...	Renas Glow IV....	B. H. Bull & Son, Bramp-ton, Ont	105.5	4.1	138.40

THE INSPECTION AND SALE ACT.

THERE came into force with the New Year an amendment to the Inspection and Sale Act with respect to the weight of certain agricultural seeds and vegetables, and some other products.

Clause 17 of the amendment reads as follows:—

A bushel of any article mentioned in this sub-section shall mean, unless a bushel by measure is specially agreed upon, that number of Dominion standard pounds of such articles which is shown in this sub-section opposite the name of such articles:

DESCRIPTION.	Standard Lb.
Artichokes	56
Beans	60
Beets	50
Bituminous Coal	70
Blue Grass Seed	14
Carrots	50
Castor Beans	40
Clover Seed	60
Hemp Seed	44
Lime	70

Malt	36
Onions	50
Parsnips	45
Potatoes	60
Timothy Seed	48
Turnips	50

A bag of any article mentioned in this sub-section shall contain that number of Dominion standard pounds of such article which is shown in this sub-section opposite the name of such article.

Artichokes	84
Beets	75
Carrots	75
Onions	75
Parsnips	65
Potatoes	90
Turnips	75

An important feature in connection with the new act is that the weight of the contents of any bag, sack or package of any of the cereal products mentioned must be stated thereon, and that uniform weights per bushel or bag for vegetables are established throughout the whole of Canada.

STATEMENT OF STALLIONS ENROLLED IN CANADA IN 1914.

BREED.	P.E.I.	N.S.	Ont.	Man.	Sask.	Alta.	B.C.	Totals in breeds & Provinces.	Total of all horses enrolled.
Clydesdale	27	37	1313	500	353	97	36	2363	
Percheron	6	7	308	155	147	77	9	709	
Shires	2		73	20	19	17	2	133	
Suffolk				8	10	4	3	25	
Belgian			21		25	10	3	59	
Draught				21				21	
French Draft							4	4	
French Canadian		1	4					5	
Standard Bred	19	43	232	55	54	17	5	425	
Thoroughbred		2	43	14		4	6	69	
Hackney	1	5	72	15	16	5	8	121	
Coach				8				8	
French Coach	1	3	5				2	11	
German Coach		1	7					8	
Kentucky Saddle Horse					1			1	
Any other Breed			5		1		4	10	
Total No. of pure- bred horses enrolled in each province . . .	56	99	2083	796	629	231	82		3976
Grades	48	81	1118	175	132	186	8		1748
Cross Breds	15	89							104
Scrubs					113				113
Total No. of horses enrolled in each province	119	269	3201	971	874	417	90		5941

SOCIETIES AND ASSOCIATIONS.

CO-OPERATIVE LIVE STOCK ASSOCIATIONS.

IN the December number of THE AGRICULTURAL GAZETTE reference was made on page 1037 to the action of the Lethbridge Board of Trade in providing funds to enable farmers with little capital to purchase live stock. Similar action has been taken in other Western centres and it is understood with good effect. At Calgary, Alberta; Canora and Elfros, Saskatchewan, co-operative live stock associations have been organized, and at London, Ontario, a joint stock company has been formed for the marketing of live stock.

THE CALGARY ASSOCIATION.

The manager of the Canadian Bank of Commerce at Calgary advised THE GAZETTE that the association at Calgary was formed by citizens of the city and that farmers are taking a keen interest in it.

The objects for which the company is established are to further the developments of the live stock and dairying industries of Alberta, and with this object in view to assist farmers to purchase live stock either by according them direct credit or by becoming surety for credit obtained by them elsewhere in connection with the purchase of live stock; also to act as dealers in live stock or dead stock and the products thereof.

The capital of the company is \$25,000 divided into 250 shares of \$100 each.

The directors of the Company are: R. J. Hutchings, D. S. Campbell, Dr. J. G. Rutherford, P. Pallison and William H. Willson, all of Calgary, each of whom has subscribed for at least one share of stock.

THE ELFROS CO-OPERATIVE LIVE STOCK ASSOCIATION.

The Elfros Co-operative Live Stock Association is capitalized at \$40,000 divided into 400 shares of \$100 each.

The object of the Company shall be to promote mixed farming in each and every district in which the Company may from time to time operate.

(a) By purchasing live stock in large or small quantities and reselling to the individual shareholders, with the provision that all and any live stock thus sold shall be sold by the Company to the shareholders at a reasonable profit, the amount of which profit shall be decided by the directors, but which shall in no case exceed a net profit of five per centum of the actual cost price of the stock so sold as delivered at any point at which such sale takes place, and any and all such profit shall form part of the general funds of the Company.

(b) By marketing or assisting in the marketing of any live stock that the shareholders may from time to time wish to sell.

The secretary, Mr. A. Kristinson, has advised THE GAZETTE of the arrangements upon which the business of the association will be handled.

"Any shareholder wishing the association to purchase cattle for him, makes an application for the stock he wishes to acquire, giving some description of the animals, and stating the highest price which he is willing to pay for the animal upon its arrival. The association then secures the live stock required. The funds required to pay for them in the first place, we secure from the bank, and as security for an advance so made we allocate to the bank such as is required of the company's shares of stock, or rather the unpaid portions of such shares. In making settlements with the purchasers of the stock, we take their personal notes, made payable to the bank. These notes the company endorses as surety, and taking them to the bank secure cash for their face value, which goes towards taking up the advance secured for paying for the stock in the first place. As security for our suretiship we also hold a chattel mortgage on all the animals which we thus sell. The time we are able, through our arrangements with the bank, to allow on the animals, is from 1 to 2 years, and in cases where it can be shown that such a length of time would be advantageous we can allow 3. This length of time is permitted in view of the fact that we are desirous of giving each purchaser all the chance possible to make the animals pay for themselves through what they can produce, thus enabling him to get into the business without withdrawing any capital

for that purpose from any of his other operations.

"As to the extent to which the farmers here are taking the matter up, I may say that it appears commonly acknowledged that this is the best practical proposition yet advanced. We have already sold in the neighbourhood of 100 shares, and have just lately purchased our first shipment of cattle, which consisted of some seventy-four head. This was all taken out the day after it arrived. We are now expecting the arrival of another shipment of two carloads, mostly all heifers, and these also are all sold beforehand. Our greatest difficulty is going to be in finding some place where we can secure at reasonable prices a good uniform grade of cattle, which will serve, besides increasing the amount of live stock here, to improve the class of live stock in the community.

"I would also point out that this is not entered into for any one's personal benefit. We have not advertised it, and have not asked a single man to join it. Judging from the interest aroused when it became known that we had secured our charter, and were ready to do business I venture to say that had it been at all advertised we would have been overwhelmed with applications for shares and also for live stock. It was because this is a new venture and we are anxious for its success that we have allowed it to remain quiet, our idea being to allow it to work out in its details before taking any steps to make it really public. We have now however, reason to believe that it is destined to become a great success, and we expect great results from it for our community in the future."

THE CANORA ASSOCIATION.

The manager of the Canadian Bank of Commerce at Canora sent *THE GAZETTE* a copy of the by-laws of the Canora Live Stock Company and writes as follows:

"The Company was organized last spring with a capital of \$25,000 in shares

of \$100; most of the shares are being subscribed for by farmers. The object of the Association is to enable the farmers to obtain pure bred stock at the smallest possible cost. As soon as applications for a carload of stock have been received the company's buyers purchase the required number of animals, and on delivery the bank advances the money direct to the farmers on their personal notes secured by the endorsement of the association. In order to protect themselves the company then take chattel mortgages on the stock. About fifty brood sows were distributed last spring and the increase from these at the present time number over 300. The first annual sale was held December 2nd, but owing to the high price of feed and the unsatisfactory conditions of the stock market only about 50 hogs were disposed of to various farmers in the district.

"The farmers around Canora are however more and more realizing the advantages of mixed farming and the necessity of improving the quality of their stock and I expect, as soon as conditions again become normal, that the live stock industry in this part of the country will show great development."

WESTERN ONTARIO ASSOCIATION.

At a meeting of representative stock breeders for Western Ontario held in London, on December 31st, 1914, a joint stock company subscribed \$5,000 in shares of \$10 each. The purpose of the company is to sell live stock on consignment at London.

The Western Fair Association granted the organization the use of the Western Fair grounds and buildings. It was proposed that monthly sales be held. It was suggested that pure bred stock and grade stock alike be disposed of. The details for carrying on the work are in the hands of the following provincial directors: S. R. MacVittie, Munsey; Captain T. E. Robson, London; J. D. Brine, Ridgetown; Harry Smith, Hay; J. T. Gibson, Denfield.

The annual convention of the Northumberland and Durham Apple Growers' Association was held in Cobourg, Ont., on Tuesday, January 26th. The following officers were elected:

President, F. B. Lovekin, Newcastle; secretary-treasurer, R. S. Duncan, Port Hope; directors, W. J. Bragg, Bowmanville, R.R. No. 4, W. H. Gibson, Newcastle, W. S. Dunbar, Perrytown, S. W. Staples, Baltimore, J. G. Wait, Colborne, R.R.

No. 3, J. W. Turpin, Colborne, H. Sirrett, Brighton, W. H. Dempsey, Trenton.

The following are the officers of the Vancouver Flockmaster's Association for the year 1915:

President, G. H. Hadwen, Duncan's; vice-president, H. D. Evans; secretary-treasurer, A. C. Aitken, Duncan's.

THE LIVE STOCK ASSOCIATIONS OF MANITOBA.

THE annual meetings of the Manitoba Live Stock Associations, held in Brandon, January 12th and 13, were the most successful conventions held under these auspices for several years, as practically the whole of two days was devoted to the business affairs of the associations and to addresses and discussions of topics of vital interest to the farmers generally, as well as to the breeders of pure bred live stock.

Following an address by J. D. McGregor on "The use of Screenings as Feed for Live Stock" a very interesting discussion ensued and a committee was appointed to investigate as to the possibility of having the screenings, something in the neighbourhood of 70,000 tons annually, re-shipped from the head of the lakes, treated in such a way as to insure the destruction of all weed seeds and utilized for the feeding of stock.

Co-operative Marketing, Killing and Cold Storage were also discussed at length and a joint committee with the Grain Growers of Manitoba appointed to investigate and report.

The efforts of the Sheep Breeders' Association in bringing in breeding ewes, in carload lots, and distributing them to farmers in all parts of the province at cost prices was highly commended, and the association urged to continue this work, as nothing more important can be done for the welfare of the province than the introduction of sheep on the farms, not only from their economic benefit, but on account of their value in the destruction of weeds.

Last year the association having handled the wool for all the members of the province through the assistance of expert graders sent out by the Dominion Department of Agriculture, obtained therefor the highest price ever realized by the farmers of Manitoba for wool, viz., 19.6c. The association was urged to continue its efforts in this line.

A protest was entered against the proposed increased classification by the railroad companies on less than car load lots of dressed hogs, such movement being considered detrimental to the interests of mixed farming.

The Stallion Enrolment Act which had been passed at the last session of the Manitoba Legislature was approved and the department requested to put the Act into operation forthwith. Some amendments

in the composition and a committee to take charge of the Act, were suggested.

A resolution submitted from the Alberta Horse Breeders' Association suggesting that added restrictions should be placed on the importation of pure bred horses from the United States, looking to debar horses with hereditary unsoundness was discussed and referred to the Western Canada Live Stock Union.

The Cattle Breeders' Association decided to continue holding their annual sale of pure bred bulls, which has in the past proved a very great benefit in helping farmers secure at their own prices, sires of good quality, delivered at their nearest railway station at minimum charges for freight and care.

The Manitoba Poultry Association represented by its executive took up the question of closer co-operation with the Live Stock Association.

The elections resulted as follows:-

Cattle Breeders' Association:

President—J. G. Barron, Carberry.
Vice-President—A. Graham, Pomeroy.
Secretary—Geo. H. Greig, Winnipeg.
Directors—J. Graham, M.P.P., Carberry; J. R. Hume, Souris; Jas. Duthie, Hartney; J. A. Chapman, Hayfield.

Horse Breeders' Association:

President—J. G. Washington, Ninga.
Vice-President—John Scarff, Hartney.
Secretary—Geo. H. Greig, Winnipeg.
Directors—Wm. McKirdy, Napinka; Freeman Rice, Binscarth; John Wishart, Portage la Prairie; A. C. McPhail, Brandon.

Sheep Breeders' Association:

Hon. President—J. D. McGregor, Brandon.
President—Geo. Allison, Burnbank.
Vice-President—A. D. Gamley, Griswold.
Secretary—Geo. H. Greig, Winnipeg.
Directors—A. J. McKay, Macdonald; Geo. Gordon, Oak Lake; Thos. Sanderson, Holland; W. H. English, Harding; J. A. Chapman, Hayfield.

Swine Breeders' Association:

President—W. H. English, Harding.
Vice-President—J. G. Barron, Carberry.
Secretary—Geo. H. Greig, Winnipeg.
Directors—A. C. McPhail, Brandon; C. W. Weaver, Deloraine; J. H. Dalgleish, Grandview; David Agnew, Douglas; J. A. Chapman, Hayfield.

PEDIGREE REGISTRATION IN CANADA.

The following tables give the names of the nationalized Record Associations in Canada and the number of pedigrees and transfers of ownership recorded during the past five years and the memberships of the different associations.

COMPARATIVE STATEMENT FOR THE YEARS 1910, 1911, 1912, 1913, AND 1914, SHOWING PEDIGREES AND TRANSFERS RECORDED.

Association.	Pedigrees Recorded.					Transfers Recorded.				
	1910	1911	1912	1913	1914	1910	1911	1912	1913	1914
Shorthorn.....	7544	7430	6681	9173	10186	3044	2639	2763	3647	5813
Ayrshire.....	2395	2833	3111	3629	3496	1079	1254	1487	1418	1364
Hereford.....	819	1295	1707	1820	2543	345	340	301	634	869
Swine.....	8205	7136	6802	11509	14441	537	732	744	1231	1916
Clydesdale.....	5702	3864	4065	3678	2900	2078	2400	2859	3616	2773
Hackney.....	167	138	144	167	101	67	67	120	162	129
Shire.....	126	190	190	274	135	55	71	100	149	93
Thoroughbred.....	243	276	134	313	194	22	22	37	70	69
Sheep.....	2105	2856	3981	3934	4826	309	664	688	645	1372
Aberdeen Angus.....	917	772	946	1010	1541	222	236	334	652	761
Galloway.....	71	38	72	23	91	40	6	24	6	7
Jersey.....	543	715	850	1135	1215	141	336	321	675	732
Red Polled.....	196	145	268	459	102	20	22	29	24	37
Guernsey.....	87	99	206	87	154	30	17	39	48	35
Canadian Cattle.....	257	325	323	341	338	86	115	126	86	117
Canadian Horses.....	118	61	383	96	53	16	16	28	24	15
Pony.....	102	88	78	329	228	2	8	43	15	25
Belgian.....	163	132	142	106	132	22	49	81	92	83
Percheron.....	969	1393	1580	1560	962	87	229	313	556	486
Suffolk.....	22	100	51	86	31		5	6	18	29
French Coach.....	12	13	22	6	19				8	5
Standard Bred.....	42	302	358	560	361		4	17	93	164
Totals	30805	30201	32094	40295	44049	8202	9232	10460	13869	16894

MEMBERSHIP OF LIVE STOCK ASSOCIATIONS IN CANADA, 1914.

	Ont.	Man.	Sask.	Alta.	B.C.	Que.	N.B.	N.S.	P.E.I.	U.S.	G.B.	
Clydesdale...	1382	349	269	139	35	72	8	15	9	7	3	2288
Shorthorn....	1342	359	208	211	11	56	15	40	9	2		2253
Ayrshire.....	390	35	29	64	20	561	39	48	24	12		1222
Swine.....	270	110	206	216	27	188	17	12	9	2		1057
Sheep.....	197	26	26	24	7	245	7	13	10	3		558
Hereford....	127	64	51	80	2	3	1	4		10		342
Jersey.....	169	18	14	21	30	34	21	16	5	3		331
Percheron...	71	41	68	77	2	10	1	1		7		278
Angus.....	91	39	29	46	2	2			3	2		212
French Cattle	2	1				185	1			2		191
Hackney.....	87	9	12	13	14	17	3	2	1	10	1	169
French Horses	3	1				179	1			1		185
Standard Bred	89	17	25	26	10	13	1	2	3	2		188
Pony.....	89	6	10	7	2	6						120
Shire.....	67	15	15	22	2	2	1		1	4	1	130
Thoroughbred.	78	6	7	22	5	9						127
Belgian Draft.	5	5	21	13	1	23				2		70
Guernsey.....	1	1			4	7	7	28	1	1		50
Red Polled...		11	5	4	10							30
Galloway.....	9	7	3	7								26
Suffolk Punch.	1	1	5	14								21
French Coach.			2	3								5
Brown Swiss..	1					3		1				5

THE CENTRAL CANADA VETERINARY ASSOCIATION.

THE 12th annual meeting of the Central Canada Veterinary Association was held in Ottawa on January 20th. The following officers were elected: Hon. President, Dr. F. Torrance, Veterinary Director General, Ottawa; president, Dr. George Hilton, Chief Veterinary Inspector, Ottawa; vice-president, R. T. O'Hara, V.S., Maxwell, Ontario; secretary-treasurer,

H. T. Sparks, V.S., Ottawa; council, C. H. Higgins, D.V.S., Pathologist, Health of Animals Branch, Ottawa; C. W. McGuire, V.S., Cornwall, Ontario; A. W. Harris, V.S., Ottawa; S. L. O'Hara, V.S., Shawville, Quebec; J. B. Hollingsworth, Chief Food Inspector, Ottawa; A. E. James, V.S., Ottawa; W. Moynihan, V.S., Ottawa, and P. W. O'Hara, V.S., Manotick, Ontario.

EASTERN ONTARIO DAIRYMEN'S ASSOCIATION.

The following are the officers of the Eastern Dairymen's Association for 1915: Honorary Presidents, Hon. Senator Derbyshire, Brockville; John R. Dargavel, M.L.A., Elgin; president, J. A. Sanderson, Oxford Station; first vice-president, J. N. Stone, Norham; second vice-president, H. C. Leggett, Newboro; third vice-president, Joseph McGrath, Mount Chesney;

treasurer, James R. Anderson, Mountain View; secretary, T. A. Thompson, Almonte; executive committee, Henry Glendinning, Manilla; G. A. Gillespie, Peterboro; W. H. Olmstead, Bearbrook; Neil Fraser, Vankleek Hill; auditors, M. Bird and John Hyatt; stenographer, William Cook; T. A. Thompson and Ivan Puhlow were re-appointed public prosecutors.

WESTERN ONTARIO DAIRYMEN'S ASSOCIATION.

The annual meeting of the Dairymen's Association of Western Ontario, was held at St. Thomas, Ontario, on January 13 and 14. The following officers were elected:

President, Robert Myrick, Springford, Ont.; first vice-president, Jas. Bristow, St. Thomas, Ont.; second vice-president, R. W. Stratton, Guelph, Ont.; third vice-president, Wm. Rothwell, Hickson, Ont.; secretary-treasurer, Frank Hens, London, Ont.

DIRECTORS:—J. N. Paget, Canboro, Ont.; T. Ballantyne, Stratford, Ont.; J. H. Scott, Exeter, Ont.; Jas. Donaldson, Atwood, Ont.; J. MacHoover, Burgessville, Ont., and Geo. E. Booth, Ingersoll, Ont.

This Association in 1914 carried on a dairy herd competition amongst cheese factory patrons. The awards were based on the amount of milk per cow furnished to any cheese factory in Western Ontario from March 1st to October 31st, 1914, from herds of 8 cows or over.

The following were the winners:—

1. Jno. Vanslyke, Dunboyne; 100 acres in farm, 11 Holstein Grade Cows, 87,158 total lb. of milk—7,923 lb. of milk per cow.

2. J. C. Harkes, Listowel—100 acres in farm—8 Holstein Cows (2 P. B., 6 Grade)—59,095 total lb. milk 7,382 lb. of milk per cow.

3. D. Campbell, Komoka—100 acres in farm—13 Pure Bred Holstein Cows—89,272 total lb. of milk—6,867 lb. of milk per cow.

4. Frank Strobridge, Ingersoll,—50 acres in farm—10 Holstein Cows—67,375 total lb. milk—6,737 lb. of milk per cow.

5. Wm. Arthur, Sparta,—100 acres in farm—10 Holstein and Shorthorn Cows—61,751 total lb. of milk—6,175 lb. of milk per cow.

6. H. W. Duncan, Atwood—100 acres in farm—10 Grade Holstein Cows—58,095 total lb. of milk—5,809 lb. of milk per cow.

7. Willis Johnson, Listowel—148 acres in farm—12 Holstein Grade Cows—67,235 total lb. of milk—5,603 lb. of milk per cow.

THE SASKATCHEWAN DAIRYMEN'S ASSOCIATION.

THE Saskatchewan Dairymen's Association, at their annual meeting held in January, adopted a constitution and set of by-laws as follows:—

This organization shall be known as the Saskatchewan Dairymen's Association and shall have for its object the advancement of the dairy industry, in all its branches in the province of Saskatchewan.

(a) By holding an Annual Convention.

(b) By co-operating with dairymen and creamery managers in the various sections in arousing interest in, and spreading information regarding dairying.

(c) By co-operating in promoting the educational work of the Department of Agriculture and College of Agriculture.

(d) By such other means as may be approved by the Minister of Agriculture.

(1) The officers of this Association shall consist of a President, Vice-President, Secretary-Treasurer, an Auditor and Board of Directors.

(2) The election of officers of this association shall be held at the regular annual meeting and said officers shall hold office until the next annual meeting or until their successors are elected.

(3) Each registered creamery company whose annual fees are paid shall be entitled to three delegates and each sub-association to one delegate. These official delegates only shall be entitled to vote.

Officers shall be elected by open ballot by delegates entitled to vote and shall receive a majority vote of the delegates present and voting.

(5) The associate membership shall consist of persons connected with or interested in dairying, subscribing one dollar membership fee annually. Honorary members may be elected by a majority vote of the members present at the annual meeting.

(6) The annual fee shall not be less than \$10 and not more than \$25 annually for each creamery company; and not less than \$5 and not more than \$15 for each sub-association. The amount to be paid shall be determined annually by the directors of the Association.

(7) At each annual meeting a Board of seven directors shall be elected. The Directors shall from themselves elect two

members to form with the President, Vice-President and Secretary-Treasurer an Executive Committee of the Association. The annual meeting of the Association shall be held at the time and place of meeting of the Agricultural Societies' Convention or the Winter Fair.

(8) The auditor and secretary-treasurer shall be appointed annually by the directors.

The following resolutions were passed:

Resolved, that in the opinion of this convention, seals are a more satisfactory means than locks for securing lids on cans and we would suggest that creameries in future employ seals on all cans.

Resolved, that this convention express its approval of the policy of cream and butter grading now in operation in government operated creameries.

Resolved, that the Express Companies be requested to ask their employees to exercise greater care in the handling of cream cans.

Resolved, that in view of the growing importance of the dairy industry in the province, it would be of very great advantage to dairymen generally if a system of cow testing associations could be established in the various dairy districts of Saskatchewan.

Resolved, that in the opinion of this convention, the attention of dairymen and stock keepers generally be called to the great importance of retaining on their farms as far as possible all female stock suitable for breeding purposes, we being firmly convinced that the present unprecedented difficult conditions will shortly disappear.

The following officers were elected:

President, W. A. McCorkell, Moosomin; vice-president, Geo. Harris, Paynton; secretary, Prof. K. G. MacKay, Saskatoon.

DIRECTORS: Charles Hankins, Valparaiso, Sask.; R. H. Bobier, Tantallon, Sask.; Henry Kaiser, Moosomin, Sask.; W. H. Frith, Melville, Sask.; A. E. Engesser, Birch Hills, Sask.; A. H. Salmon, Kelso, Sask.; L. C. Wirtz, Wadena, Sask.

At a meeting of the directors following the convention this body, in accordance with section 6 of the Constitution and By-Laws, fixed the annual fees at \$15 and \$5 for creamery companies and sub-associations respectively.

THE ALBERTA POULTRY ASSOCIATION.

The Alberta Poultry Association, at its annual meeting at Edmonton on January 6th, amended its constitution by providing that any person debarred from showing by a local association shall have the right to appeal to the executive committee of the provincial association, within 30 days of his debarment, the decision of this committee to be final. This provision was made retroactive, thereby allowing persons now debarred to appeal within 30 days of notification of this change in the constitution.

A motion was passed also providing that members of local poultry associations, affiliated with the provincial association, be requested to refrain from

showing their birds at poultry shows or exhibitions not so affiliated.

The election of officers resulted as follows:

President, R. B. Hunter, Edmonton; first vice-president, W. J. McKenzie, Claresholm; second vice-president, A. E. Humphries, Lethbridge; secretary-treasurer, W. McC. Moore, Edmonton.

EXECUTIVE COMMITTEE: W. R. Blew, Calgary; P. Ashcroft, Lethbridge; J. C. Longmore, Edmonton; R. E. Moffatt, Claresholm; James Blair, Granum; George Stevenson, Camrose; Percy R. Banks, Lacombe.

THE NOVA SCOTIA POULTRY ASSOCIATION.

The third annual meeting of the Nova Scotia Poultry Association was held at the Agricultural College on January 14th, 1915.

Representatives were present from the different county poultry clubs and egg circles of the province.

The president, Mr. W. W. Osborne, New Glasgow gave a brief outline of what had been done for the poultry industry in the past year.

The secretary stated that it was not possible, under present circumstances, to expect further assistance to the larger county clubs, but it would be as much as could be expected to have the same assistance as was given during the past year. It was resolved that the members ask the department to give the same, and, if possible, a little more assistance to the County Poultry Shows.

After some discussion regarding uniform prize lists, it was resolved that the secretary draw up a prize list and rules, to be submitted to the different clubs, and, if adopted, they be the standard prize lists

and rules for all County Shows in the province.

A discussion took place respecting the protection of members who have received eggs and stock from breeders. It was decided that all members who have felt that they were unjustly dealt with by any breeder within or outside the province should write the secretary to have the matter dealt with in the name of the Association.

The election of officers resulted as follows:

President, W. W. Osborne, New Glasgow.
Vice-President, F. E. Jackson, North Sydney.

Secretary-Treasurer, J. P. Landry, Truro.

Executive Committee: E. E. Frehill, New Glasgow; W. A. Godfrey, Yarmouth; D. W. Brodie, Glace Bay; W. H. Henry, Shubenacadie; C. H. Wisener, Pictou; James McConnell, Antigonish; Edson Griffin, Port Williams.

THE PURE MAPLE SUGAR AND SYRUP AGRICULTURAL CO-OPERATIVE ASSOCIATION.

At the annual meeting of the Pure Maple Sugar and Syrup Agricultural Co-operative Association, held at Beauceille, Que., on January 12th, it was resolved that the federal authorities be asked to appoint inspectors in connection with the enforcement of the Adulteration Act of 1914 with respect to maple products.

The following were the officers elected for 1915: President, Gustave Boyer, M.P.; vice-president, Chas. A. Fisk, Abbotsford; secretary, J. H. Lefebvre, Waterloo; Directors, J. H. Grimm, Montreal; R. T. Brownlee, Hemmingford; L. J. A. Dupuis, Desaulniers.

THE ONTARIO AGRICULTURAL AND EXPERIMENTAL UNION.

THE 36th annual convention of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, on January 12th and 13th. The following officers and directors were elected.

President, Herbert Groh, Preston; vice-president, J. B. Fairbairn, Vineland; secretary, Prof. C. A. Zavitz, Guelph; assistant-secretary, Professor W. J. Squirell, Guelph; treasurer, A. W. Mason, Guelph.

DIRECTORS:--Dr. G. C. Creelman, Guelph; H. L. Beckett, Hamilton; R. S. Duncan, Port Hope; H. Sirrett, Brigh-ton; J. E. McLarty, Guelph.

AUDITORS:--R. R. Graham, Guelph; S. H. Gandier, Guelph.

The following committee, on the pre-vention of the importation and the dis-

tribution of noxious weed seeds in grains and in screening was appointed.

G. H. Clark, Seed Commissioner, Ot-tawa, chairman; J. R. Dymond, Seed Branch, Ottawa; Professors R. Har-court, G. E. Day and J. E. Howitt, O.A.C., Guelph.

The committee consisting of Prof. J. E. Howitt, chairman, Hon. Nelson Mon-teith and Mr. W. J. Lennox, to make a study of the present Weed Acts of the different provinces of Canada, and if thought advisable to make suggestions as to how the eradication of weeds in On-tario could be made more effectual, re-ported progress and made certain recom-mendations. This committee was re-appointed for 1915, and was authorized by the meeting to carry out the recom-mendations of the report.

THE WESTERN ONTARIO SEED GROWERS' ASSOCIATION.

BY L. H. NEWMAN, SEC., CANADIAN SEED GROWERS' ASSOCIATION, OTTAWA.

At the annual meeting of members of the Canadian Seed Growers' Association, resident in Ontario, which was held in connection with the Ontario Provincial Winter Fair at Guelph in December, there was organized an Association known as "The Western Ontario Seed Growers' Association." This Association is com-posed of growers whose seed may not be eligible for registration as "Registered Seed" in the Canadian Seed Growers' Association but which nevertheless may be of extra good quality, purity and vitality. Confining its effort to this class of growers, this new organization will not in any way compete with the C. S. G. A. but may rather be regarded as a training school for recruits for the latter body. The objects of this Association, as given in the Con-stitution are as follows:

To encourage a general and constant improvement in the production and dissemination of all high class field root

and vegetable seeds including cereals, clovers, grasses, roots and vegetables by

- (a) Co-operating with the Department of Agriculture.
- (b) Holding meetings to discuss matters of importance to the seed growing industry in the province.
- (c) Co-operating with exhibition and seed associations and societies, firms or individuals to advance the in-terests of the seed growing industry generally.
- (d) Holding or assisting to hold com-petitive exhibitions and educational meetings.

The officers of this Association are:--

Hon. President, George H. Clarke, Ottawa; hon. vice-president, Prof. C. A. Zavitz, Guelph; president, A. McKenny, Amherstburg; vice-president, Fred Foys-ton, Minesing; secretary-treasurer, R. W. Wade, Toronto.

On December 4th there was organized in Durham County, Ont., a potato seed growers' association known as "The Manvers Green Mountain Potato Seed Centre." The president is W. H. Hooper, Pontypool, R.R. No. 3, Ontario, and the secretary-treasurer, W. A. Jakeman, Ponty-pool, R.R. No. 1.

The officers of the British Columbia Dairymen's Association for 1915 are as follows:

Honorary-president, A. C. Wells; pres-ident, William Duncan; secretary-treasurer, H. Rive; Directors, N. Grimmer, G. S. Harris, E. Raper, J. M. Steeves, P. Owens, P. H. Moore, W. N. Townsend and J. W. Berry.

REVIEWS.

Methods of Modern Agriculture, by Wm. MacDonald, D.Sc.; The Macmillan Company, New York and Toronto; 5 x 7½ inches; 81 pages.

This is a popularly written brief account of the life and accomplishments of the following renowned makers of modern agriculture: Jethro Tull, founder of the principles of dry farming; Coke of Norfolk, founder of experimental farms; Arthur Young, author of the *Agricultural Tour*; John Sinclair, founder of the British Board of Agriculture; Cyrus H. McCormack, inventor of reapers. The following quotation is credited to Arthur Young: "The magic of properties turns sand into gold. Give a man the secure possession of a black rock and he will turn it into a garden; give him a nine years' lease of a

garden and he will convert it into the desert."

The Imperial Year Book of the Dominion of Canada, 1914-15, John Lovel and & Son, Ltd., Montreal, contains 572 pages. This Year Book, which is concerned exclusively with Canada and the Empire, gives a concise and comprehensive review of Canadian life and activity since Confederation. The imperial section opens with a short historical sketch, showing the evolution of the Empire since the time when Newfoundland, the oldest British colony, first owed allegiance to the British crown. The work is divided into seven sections and the matter is so classified within these as to make the work a ready reference handbook.

NEW PUBLICATIONS.

THE DOMINION DEPARTMENT OF AGRICULTURE.

BULLETINS.

No. 79, *Renovation of a Neglected Orchard*, with special reference to the best orchard progress, by M. B. Davis, B.S.A., Assistant to the Dominion Horticulturist. This is an illustrated pamphlet of 32 pages. The information contained is of special interest to owners of orchards, more particularly in Eastern Canada, where owing to bad conditions they are giving their owners but small returns. The bulletin shows how, with a reasonable amount of labour, any such orchards, that are now little better than a menace to the local orchard industry, may be transformed into remunerative parts of the farm.

Publications Available for Distribution. This is a revised list of the bulletins and reports of the Department of Agriculture that are available for distribution. It contains publications of the Experimental Farms and each of the other Branches of the Department, and deals with practically all branches of agriculture.

Circular No. 7, Potash in Agriculture, by Frank T. Shutt, M.A., D.Sc., Dominion Chemist. This is a re-print of Dr. Shutt's article on Potash in Agriculture that appeared in the December number of THE AGRICULTURAL GAZETTE.

Agricultural War-Book. This handbook of 156 pages, bearing the slogan "Patriotism and Production", is a compilation of speeches and articles of foremost authorities, and statistics bearing upon the present and probable future supply of agricultural products as influenced by the war. It has been prepared for the information of officials and others interested in the general movement being carried on over Canada for increased production.

THE DAIRY AND COLD STORAGE BRANCH.

Bulletin No. 43, *The Cold Storage Act, 1907, As Amended in 1909, and Regulations*. This is a re-print of Bulletin 23 of the Dairy and Cold Storage Series, and contains, in addition, the regulations of June 20th, 1914.

THE LIVE STOCK BRANCH.

Bulletin No. 17, "Swine Husbandry in Canada." This is a companion book to Bulletin No. 12 "Sheep Husbandry in Canada," and No. 13 "Beef Raising in Canada." It contains brief histories and descriptions of the several breeds of swine reared in Canada, and deals with the breeding and rearing of the bacon hog. A section devoted to "Pork Production on Canadian Farms" describes how successful and persistent hog raisers rear and feed their animals. Housing and other features of the industry are also taken up.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE.

ONTARIO.

Swine, Bulletin No. 225, by G. E. Day, B.S.A., Professor of Animal Husbandry, Agricultural College, Guelph, containing 80 pages, profusely illustrated, is a most practical and complete statement, covering the selection, housing, feeding and general handling of the bacon hog. The various types of swine are described, with photo engravings of prize-winners at some of the leading live stock shows.

Annual Report of the Farmers' Institutes of the Province of Ontario, 1914. This is an announcement of the Farmers' and Women's Institute meetings for 1914 and 1915, statistical reports for 1914 and a list of speakers and subjects.

QUEBEC.

Thirty-Second Annual Report of the Dairymen's Association and of the Dairy School of the Province of Quebec. This is a pamphlet of more than three hundred pages containing a report of the Annual Convention, the laws concerning the inspection of creameries and cheese factories and concerning the manufacture of dairy products and many other matters of importance. The secretary of the Quebec Dairy Association is O. E. Dalaire, Director of the Dairy School of St. Hyacinthe.

SASKATCHEWAN.

Bulletin No. 42, *Suggested Lines of Co-operative Production*, by W. W. Thomson, B.S.A., Director Co-operative Organizations. This bulletin deals with community breeding associations, seed growing centres, co-operative egg circles and beef rings. It is a companion bulletin to one recently issued on co-operative live stock marketing.

BRITISH COLUMBIA.

Bulletin No. 59, Agricultural Statistics, 1913. The information is prepared in the form of district reports and table summaries for purposes of convenience. The province is divided into the following districts: Royal Mainland, Thompson River Watershed, Okanagan and Boundary, East and West Kootenays and Northern British Columbia. The bulletin is generously illustrated.

Full Report of the Royal Commission on Agriculture Appointed in December, 1912, Under the Public Enquiries Act. The Commission consisted of W. H. Hayward, Duncan; Alexander Lucas, Vancouver; S. Shannon, Cloverdale; Wm. Duncan, Comox; J. J. Campbell, Nelson; J. Kidston, Vernon. The Commission commenced early in January of 1913 and con-

tinued for seven months, holding sittings at 69 points in the Province, where they took evidence from more than six hundred witnesses, many of them representing farmers' institutes, agricultural associations, boards of trade, etc. Visits were then made by members of the Commission to other countries, viz.:—Great Britain, Ireland, Denmark, Germany, France, Holland, United States, New Zealand and Australia, besides other provinces of Canada. Practically every phase of agricultural conditions was gone into. The report which is divided into two parts occupies almost four hundred pages of well arranged matter.

MISCELLANEOUS.

Bulletin No. 568, United States Bureau of Education, *Elementary Education in England*, by I. L. Kendel. This is a pamphlet of one hundred and fifty-eight pages, divided into eighteen chapters under the heading of Nature Study. The bulletin says that no other subject in the school curriculum is so wide and unlimited in scope as nature study. Combined with object lessons this branch of school work is intended to have special reference to the surroundings of the scholars. The natural and historical features and plant life of the locality and the industries of the inhabitants have the view of forming the extension of intellectual and accurate observations. Such instruction is said to direct the attention of the scholars to real things making them acquainted with simple natural facts and will develop a love of nature.

Bulletin No. 618, United States Bureau of Education, Washington, *County Unit Organization for the Administration of Rural Schools*, by A. C. Monahan, Bureau of Education. In the United States three district rural school units of organization are to be found,—the district, the township and the county. In addition there are several instances of mixed systems in which responsibility for management is divided between the district and the township, the district and the county, or the township and the county. The purpose of the bulletin is to bring out the advantages of the larger unit of organization.

Bulletin No. 601, United States Bureau of Education, Washington, *Agricultural Teaching*. This is made up largely of papers presented at the Fourth Annual Meeting of the American Association for the advancement of agricultural teaching.

The Journal of the South Eastern Agricultural College, Wye, Kent, England, for the following years: 1907, 1909, 1910 and 1911. These are reports of the work of the South Eastern Agricultural College, including the college farm.

NOTES.

In response to an appeal from the Secretary, to the members of the Dairy-men's Association of Western Ontario, for contributions towards the Patriotic Fund, there has been raised \$4,400.

The Tablet, a financial Belgium journal, estimates that the damage, by the war, to the rural districts in Denmark, to crops, cattle, pigs, sheep, horses and farm buildings, amounted to about \$283,614,000.

The final contest in connection with the Boys' Calf Feeding Competition, for which \$1,000 in prizes will be distributed, will be held at Brandon, March 17th and 18th, 1915. The annual sale of pure bred bulls, conducted by the Manitoba Cattle Breeders' Association, will be held at the same time and place.

Mr. H. W. Watson, Director Elementary Agriculture, Nature Study Section, Department of Education of Manitoba has 250 lantern slides on school gardening, school grounds, school fairs, manual training, sewing, cooking, homes and grounds, streets beautified, parks, etc. Most of these were made from photographs taken by himself and are used for lecture work. Mr. Watson is adding to his slides as suitable negatives are secured. The slides cost him about 35 cents each when he furnishes the negative.

The South Eastern Agricultural College, situated in Wye, Kent, England, like Agricultural Colleges in Canada, conduct summer teachers' courses.

According to a journal of that college these courses last for about two weeks. A series of lectures are delivered on such subjects as the following: elementary and advanced plant pathology, poisons in plants, elementary chemistry, bacteriology, entomology, mythology, poultry-keeping and vegetable cultivation.

The afternoons are devoted to practical demonstrations in horticulture, gardening, land surveying, bee-keeping and poultry-keeping.

During the course public evening lectures are given on such subjects as cellulose and its uses and standard bread.

The Georgia Bankers' Association sent fifteen boys and fifteen girls to the short course of the State College of Agriculture.

The Farmers' and Women's Institutes of the province of British Columbia had, up to the end of December, 1914, contributed \$4,350.65 towards the Patriotic Fund.

One hundred and forty-one farmers in Ontario carried on co-operative experiments with oats in 1914.

"In 91 per cent of the cases on those farms, the variety, O. A. C. No. 72, showed superiority over other varieties chosen by farmers. It is safe to say that this oat will be worth millions of dollars to Ontario, and that it will soon supplant nearly all other varieties."—*Prof. C. A. Zavitz*.

Mr. James Crawford, representing linen manufacturers in Ireland and Scotland, is visiting Canada to endeavour to encourage a greater production of flax.

Owing to the war, the linen factories in the old land are finding themselves short of flax fibre which has been drawn largely from Belgium, France and Russia.

Mr. Crawford will confer with the provincial and Dominion Government representatives throughout Canada, in many parts of which, more particularly in the West, flax is grown over large areas, but the fibre has been largely allowed to waste. Mr. Crawford is prepared to recommend newer methods of handling the crop than generally prevails on this continent.

The Department of Education of British Columbia has announced a series of summer courses of instruction for teachers. Courses are to be held in the Victoria High School from July 6th to August 1st. The courses will include the following subjects: Rural Science and School Gardens, Manual Training, Manual Arts, Household Arts, Art and Vocal Music. Competent instructors will be in charge of the classes, and in several courses as much outdoor study will be taken as is found practicable and consistent with the programme of studies. The Rural Science Course will include studies in school gardening and studies with respect to plants, birds, insects, soil, farm animals, horticulture and floriculture, field husbandry, weeds, bacteriology, weather, agricultural literature and forestry.

The department of Education of Manitoba issues a monthly bulletin to teachers throughout the province. It is a pamphlet of eight pages and contains official notices, also hints and suggestions for the teacher in the class-room, garden and play-ground. Among other things the December bulletin contains a list of bulletins of the Department of Agriculture at Ottawa, that were considered useful as supplementary reading for the pupils. It also contains a small list of selected bulletins issued by the Agricultural Department at Winnipeg.

The Department of Agriculture of British Columbia will make a distribution of 1 pound each of 3 varieties of corn and 5 pounds of alfalfa seed to members of Farmers' Institutes in that province for the season of 1915. With each allotment of seed instructions are given regarding the sowing of the seed and caring for the growing crop. Those who receive the seed must agree to furnish reports of the results obtained.

The department also is preparing to provide for sale, to members of Farmers' Institutes, selected seed of varieties of corn, mangels, alfalfa and oats, suitable for the province.

The Canadian Pacific Railway Company, through the Department of Natural Resources at Calgary, has in operation a

system for assisting farmers to purchase live stock. Dr. J. G. Rutherford, Superintendent of the Agricultural and Animal Industry Branch, has explained the scheme to THE AGRICULTURAL GAZETTE.

He said:—"This department purchases at the lowest possible price, good, sound grade heifers and young cows, which are afterwards sold, practically at cost, to settlers on the lands of the company, on one year's credit, secured by lien note bearing 8 per cent interest.

"The settler holding the cattle reports once a month giving full information regarding each animal, the amount of feed on hand, etc. When the note is due, if the settler cannot pay in full, but conditions are otherwise satisfactory, his credit is extended, it being contrary to the policy of the company to exercise the lien unless such action is absolutely necessary.

"Occasionally deserving settlers, who for one reason or other, are unable to finance themselves, are furnished with horses, but these transactions, together with advances for seed grain, implements, etc., are quite distinct from the live stock operations outlined above. A very considerable number of registered Shorthorn bulls of dairy breeding are being placed in different districts throughout the country. Although preference in this regard is given to districts in which the company has the largest numbers of cattle out under lien, a very considerable number of bulls have been furnished to other districts."

"Up to December 31, after five months only, twenty-three billion dollars was the total of the world financial statement (funds provided and trade losses), not reckoning the destruction of property. In three months the little kingdom of Belgium suffered loss to the extent of over \$1,000,000,000. And the end is not yet, for 2,000,000 refugees cared for by Holland, England and France and 5,000,000 within the German lines, are being fed by the United States, Canada and other nations. The latest call is for at least one shipload of food every day. Yes, all the world is in the war. The British Empire is at war, and Canada is just beginning to realize that she also is really at war.

"The farmer who quietly, honestly, determinedly lays his plans for more wheat, more oats, more milk, more beef, more flax, more of almost anything that he knows best how to grow, will be doing only his duty, he will be contributing what he alone can contribute, and he will be helping in the fight, for, as Napoleon said 'An army fights on its stomach.'

"Let us remember that it is more bushels per acre, more pounds of milk per cow, more pounds of meat per animal that will count, and that will mean more total food per farm. Let us in 1915 make good on the farmers' fighting-line with 'More than Usual.'"

C. C. James.

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

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The Agricultural Gazette

OF CANADA

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MARCH, 1915

No. 3

THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

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FOOD PRODUCTION ON CITY LOTS.

THE slogan, "Patriotism and Production," is proving effective in arousing interest and determination on the part of crop growers to put forth a special effort this year to increase the yields on their farms. Thousands in every province who have heard or read the message are working out plans for the securing of better than usual returns. Never in the history of the Department of Agriculture has there been so keen a demand for bulletins and reports that have been prepared to teach the best methods of agriculture.

Nor is the increased production movement confined to the rural districts. Towns and cities are taking it up by converting vacant property into gardens. The February GAZETTE told on page 183 how Regina is dealing with this problem and in this number the experiences and methods of other cities are described. This is a work that requires only a little encouragement and help from city and town councils, boards of trade, horticultural societies, improvement leagues and other organizations to accomplish a great deal. To set this movement going is to commence a revolution toward civic beautification, as it at once means a thorough and permanent clean-up, without cost to the community, of vacant areas that are too often weed infested dumping grounds. It means more than this—the providing of quantities of health-giving foods in the form of fruits and vegetables fresh from the soil, besides flowers to enjoy and to be given away. The cultivation of fruits, vegetables and flowers has a great moral influence and tends towards better citizenship.

A plan for the guidance of civic bodies to launch and carry on this movement has been worked out by Mr. W. T. Macoun, Dominion Horticulturist. It appears in this issue under the title, "A Patriotic Vegetable Gardening Competition."

THE PANAMA-PACIFIC EXPOSITION.

THE Honourable Martin Burrell, Minister of Agriculture for Canada, on February 25th represented the Dominion at the dedication of The Canadian Building of the Panama-Pacific Exposition, now being held at San Francisco, California.

"It is at once an honour and a privilege officially to identify our building as a part of your marvelous exposition. We have endeavoured, I trust with some success, to make the structure worthy of a place amongst the noble examples of architecture which grace this historic water front. We have striven in our exhibit to illustrate the character of our natural resources and to portray their development and have tried to reflect in some measure the varied activities of the eight millions of people who are your northern neighbours. We are inspired with the same ideals of democracy, and our nation, like your own, has been and still is engaged in subduing the wilderness, peopling its waste spaces and wresting from the forest the field and the mine those things which minister to the needs and the comfort of mankind.

"I but voice the sentiments of your visitors in saying that the magnificent structures which have been erected here, and the rich and varied examples of man's handiwork and nature's products which they contain, make more than a local, more than even a national appeal. The exposition in its entirety strikes a universal note. It exemplifies and sums up the march and progress of modern life and creates new and higher aspirations. Its noblest lesson, its loftiest message, is surely this: That the arts of peace and the service of our common humanity demand the exercise of man's fullest powers, challenging all that is strongest and best in his nature, and in meeting that call his energies and ceaseless activities will find their truest expression and man himself his deepest happiness.

"Once more, Canada gladly tenders you her tribute of praise and active co-operation. Your Government invited all nations of the earth to take part in this exposition, and they have finely responded. That Canada's participation should be prompt and whole-souled is both natural and fitting. The social and industrial intercourse of our peoples, vast in volume and happy in character, is yearly increasing. From the distant East, where the Atlantic breaks on the rock-bound coast, to the far-flung West, there exists for three thousand miles the longest and safest border in the world. Through many miles of fertile prairie the people of both countries shake hands across an invisible line. Our very nearness has created peculiar difficulties and differences, but for one hundred years the arbitrament of the sword has been thrust aside for that finer and successful appeal to the sober and reasoned judgement of the national mind.

"And now, sir, having spoken as the representative of the Government of Canada, I have the honour to discharge a further and special duty, that of delivering to you a message intrusted to me by my august sovereign.

"The King feels that there is no doubt this great undertaking will be attended with marked success and prove worthy of the vast achievement which it celebrates.

"His Majesty rejoices to think his Dominion of Canada is taking part in this exhibition, and thus testifying to the appreciation of the British Empire at the linking of the Atlantic with the Pacific and at the happy results which may be expected from the mingling of the waters of the two oceans.

"I am also charged with a message from His Majesty's Government expressive of their good wishes, and those of all British subjects to the organizers of the exposition. May it be a good presage for the peace and happiness of the world."

PART I.

Dominion Department of Agriculture.

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED.

THE DOMINION EXPERIMENTAL FARMS.

THE DIVISION OF HORTICULTURE.

FRUIT CULTURE AT THE EXPERIMENTAL FARMS.

BY W. T. MACOUN, DOMINION HORTICULTURIST.

AT the time the Dominion Experimental Farms were organized in 1887 comparatively little reliable information was available in Canada on the varieties of fruits best suited to different sections of the country, although certain private individuals interested in horticulture had contributed through the Ontario Fruit Growers' Association, the Nova Scotia Fruit Growers' Association, and the Montreal Horticultural Society much valuable information based on their personal experience, but the information was available mainly to the members of the Societies who received the annual reports. It seemed, therefore, the first duty of the Government to determine by experiment, at least at the few points where the farms were established what varieties were best for these parts of Canada, and during the past twenty-five years many varieties have been under test with the result that definite information is available to a large number of people. Not only has the Government depended for its information on the results

obtained at its own farms and stations, but when bulletins were published, as they have been on a number of kinds of fruit, the experience of private individuals scattered over many parts of Canada was taken advantage of when publishing lists of recommended varieties.

During recent years more attention has been paid to cultural methods than was possible at first, and at the newer Stations especially, where the orchards have been planted with a view to cultural work, valuable information will soon be available.

Since the year 1890 experiments in spraying fruits, vegetables and ornamental plants to prevent destruction by injurious insects and fungous diseases, has been an important part of the work.

Beginning with the year 1898 and for seventeen consecutive years, records have been kept of the yields of individual trees in the orchards at the Central Farm with the result that there are now available a mass of figures in regard to the time of bearing, regularity of bearing, and

productiveness of different varieties of fruits which, so far as we are aware are more complete and cover a longer period, than those of any other institution. These figures have shown that trees of the same variety vary much in productiveness, though planted at the same time and growing apparently under very similar conditions, and while it is not known yet whether such characteristics will be perpetuated by grafting, trees are now bearing which have been propagated from trees bearing good crops every other year, every year, and another bearing a relatively small crop.

The use of cover crops in the orchards has been strongly recommended by the Horticultural Division for the past nineteen years and many kinds of plants have been tried, to determine which were the best for use, the information obtained being published in the annual reports and elsewhere.

The top-grafting of tender varieties on hardy stocks has occupied the attention of the horticulturist and information has been published which shows that top-grafting tender varieties on hardy stocks does not, as a rule, make them sufficiently hardier to withstand cold winters.

The origination of new varieties of apples has been an important part of the work since the year 1890, when three thousand Russian apple seedlings were planted at Ottawa and since that time, both by cross-breeding and by the growing of seedlings pollenized naturally, many trees have been raised to fruiting age and a large number of really promising varieties have been produced of which a number have been named. These are now being tested by the Branch Farms and Stations and by private individuals and it is expected that some of them will take their place before many years among the best commercial varieties. In Volume 1, No. 4, April, 1914, of THE AGRICULTURAL GAZETTE, a fairly full account is given of the work with apples at the Experimental Farms.

Several useful bulletins have been published on the following:—apple culture, cherry culture, peach culture, plum culture, strawberry culture, bush fruit culture, as well as several pamphlets including one on grape culture and several spraying calendars, and the annual reports from 1888 to 1914 contain very much information of value.

TREE FRUITS IN THE PRAIRIE PROVINCES.

TREE fruits have been given a very thorough test at the Experimental Farms in the Prairie Provinces and while the ideal apple has not yet been obtained for general culture on the prairies, continuous progress is being made.

As an example of what is being done at these Farms, the work at the Indian Head farm may first be mentioned. When this farm was established in 1888 it consisted of a treeless area of land. Trees were at once planted as shelter belts, but it was some years before they afforded much protection. In 1888 there were 60 varieties of apples planted on the open prairie, represented by

200 trees; 30 trees of 8 varieties of plums; 34 trees of 7 varieties of cherries; 20 trees of 7 varieties of pears; and 3 peach trees. Most of these made good growth that year. One hundred and twenty-five apple trees survived the first winter, but only 1 pear tree, 11 plum trees and 3 cherry trees. In the spring of 1889, 43 varieties of Russian apples consisting of 342 trees were planted, of which 257 were alive in autumn. There were also planted 109 crab apple trees of eight varieties. The winter of 1889-90 killed a large proportion of the apple trees planted in 1889 and only 6 crab trees were alive of those planted in 1889. It is

interesting to note that among the few varieties which were hardy to the tip in 1890 were the Duchess and Hibernial, which have since been successfully fruited in some parts of the prairies. In 1890, there were 500 Russian apple seedlings planted. These stood the winter of 1890-1891 without loss, but in the winter of 1891-92 every tree was killed, one Red Siberian Crab Apple tree planted in 1888 being the sole survivor in 1892 of the apple and crab apple trees planted. Seven varieties of Russian apples planted in a sheltered place in 1892 succumbed the following winter. Mr. Angus Mackay writes thus in his report for 1893: "The lonely Red Siberian Crab that has weathered four winters, and last year had a few blossoms on, succumbed this spring, and is now numbered with many others of its kind gone before." Most of the plums and cherries had died. Twenty-seven more Russian varieties of apples represented by 184 trees were planted in 1893 in a plot well protected by maple hedges. Only 36 of these were barely alive in the spring of 1894. Thirty-two trees of seven Russian varieties were planted in a maple plantation of which 15 died the first winter. Native Manitoba plum trees were planted in 1894 and 1895 and plum trees began to bear fruit in 1896. Plantings of many varieties of apples have been made from time to time since, but with little success.

A wild crab apple *Pyrus baccata*, the seed of which had been obtained from St. Petersburg, Russia, having proved hardy, Dr. Wm. Saunders then Director of the Experimental Farms, conceived the idea of crossing this with the larger apples in order to if possible, obtain harder cultivated varieties, the work being begun in 1894. Many hundred crosses resulted; the trees were later sent to Indian Head and by 1899 the trees began to fruit and to-day the varieties Charles, Silvia, Jewel, Tony and others are proving reliable varieties

for Indian Head and many other parts of the prairies. It is true the fruit is small and crab-like, but these fruits mark a step in advance.

These crosses were again crossed by Dr. Saunders with the larger fruited, though tenderer varieties of apples, with the result that fruit from two to two and a half inches in diameter has been obtained. Trees are now being propagated for test on the prairies and it is expected that some of them will prove hardy.

At the Lethbridge Station the conditions are more favourable for apple culture, and apple trees have fruited during the past two years and there is every evidence that the trees will continue to prove hardy. At the other prairie farms the climatic conditions are little if any more favourable than at Indian Head, except at Brandon, which is somewhat better. At none of the farms, however, with the exception of Lethbridge, have apple trees survived for any length of time without protection.

Some fifty thousand Russian and other hardy apple Seedlings are now being grown in nursery rows at the prairie farms with the object of subjecting them to several winters before they are put out in orchards, by which time the hardiest will be known.

By growing trees in well protected places, protecting the trunks and main branches with sacking in winter and using only the hardiest varieties such as Charlamoff, Duchess and Hibernial, apples can be and are being produced in many places on the prairies, particularly in Southern Manitoba where so much protection is not necessary. What is needed are varieties of apples as hardy, or nearly as hardy, as the native trees and shrubs and it is the duty and endeavour of the Experimental Farms to obtain such varieties and it is with confidence that ultimately such apples and other fruits will be found that the work is continued from year to year.

A PATRIOTIC VEGETABLE GARDENING COMPETITION.

MR. W. T. Macoun, Dominion Horticulturist, has recently been addressing meetings in the Patriotism and Production Campaign, and has been urging the people of the cities, towns and villages to grow more vegetables this year and to increase production, and also save some money that might be devoted to needy war funds. The following suggestions for Patriotic Vegetable Gardening Competitions have been prepared by Mr. Macoun in the hope that they may prove useful. Already competitions are being organized as a result of Mr. Macoun's efforts and addresses.

A COMPETITION PLANNED TO AID THE EMPIRE AND TO HELP YOU.

The British Empire will need all the food that can be made available in 1915. Everyone in cities and towns with vacant land can produce some food if he will. By growing vegetables for your household you will release food for someone else, that would have been sold to you. By growing vegetables for your own use, you will also save most of the money that you would otherwise have paid for them, which you can give to the many needy war funds should you care to do so. Vegetables fresh from the garden are much more appetizing than those which have been gathered for some time. You will, if you grow your own, find that you will eat more vegetables than you have been accustomed to, and will have less desire for the more expensive kinds of food.

RULES OF THE COMPETITION.

The rules governing the competition have been made as simple as possible, so that everyone whether he knows little or much about gardening has a chance of winning a prize.

It is presumed that many will enter who never gardened before and whose yards are at present in a very rough condition, and this has been taken into consideration when the rules were made.

Size of Gardens:—Gardens entered for the competition are to be 1000 square feet in area. In other words, they should be 50 x 20, 40 x 25, 30 x 33½, or any other shape that will give the required area. Potatoes are excluded from the general garden but may be grown alongside, and, if possible a special prize or prizes will be given based on the same points as for the general garden. There is no restriction as to size of plot in the case of potatoes.

Times of Judging:—The gardens will be visited six times by the judge, or judges, once before any work is done and then once a month in May, June, July, August and September.

Score of Points:—Each month, after the first visit, there will be a possible maximum of the following points, a total of 500 points for the season. At the first visit the points for difficulties (to be) overcome will be the only ones considered, full notes being taken on the condition of the land. A score will be made at the second visit from the notes taken at the first and from the improvements that have been made.

Quantity and Value of Vegetables	20	points
Quality of Vegetables	20	"
Assortment of Vegetables	20	"
Difficulties overcome	20	"
Cleanness and neatness	20	"
		100
		"

Quantity and Value:—The quantity of vegetables grown will be decided both from the observations made by the judge, and by a signed statement from the householder showing how much of each kind of vegetable was gathered and the approximate value of the same.

Quality.—By quality is meant condition of development and uniformity, and any other factor that affects the value of the product, except that of palatability, for the judge will not be expected to test the eating quality of the vegetables.

Assortment.—By assortment is meant the number of kinds of vegetables grown. There should be a fair proportion of each kind.

Difficulties overcome.—The judge will take into consideration the difficulties which each competitor faces when beginning his garden operations. If one competitor has many difficulties to overcome he will receive a high score under this head, but another competitor with fewer difficulties will get compensation in other ways.

Cleanness and Order.—Freedom from weeds, insects, and diseases, good cultivation and straight lines come under this head, or in other words, the general appearance of the garden will be considered.

HOW TO GET INFORMATION IN REGARD TO VEGETABLE GARDENING.

The judge, or judges, will furnish pamphlets free giving information on the best varieties of vegetables to plant, the general preparation of the soil, a suggested arrangement of vegetables in the garden (which need not necessarily be followed), directions for controlling injurious insects and diseases, and cultural directions for the different kinds of vegetables. It is expected also that information not covered by the pamphlets will be cheerfully supplied by the committee.

NOTE.

KILLED IN ACTION.

Upon the breaking out of the war, Mr. Paul Humbert, of the Tobacco Division, Department of Agriculture, was summoned to the French colours. A vivid picture of the soldier's life, taken from a letter written by him to a friend in the department, appeared in the local press some little time ago, under the title of "A Night in the Trenches."

Mr. F. Charlan, Chief of the Tobacco Division, has just received a letter from Mr. Humbert's father, announcing his son's death on the

battlefield, while leading the men of his section in a successful attack upon the German trenches. While the letter indicates only too clearly the grief felt by both father and mother at the loss of their son, it also gives us a glimpse of the spirit of proud sacrifice which is nerving the people of France to-day.

In closing, Mr. Humbert says, "I leave it with you to convey this sad news to the Canadian authorities and also to those friends whom his frank and loyal nature had won during his stay among you."

The Honourable Martin Burrell, Minister of Agriculture, when in California representing the Dominion at the dedication of the Canadian Building of the Panama-Pacific Exposition paid a visit to the Panama-California Exposition being held at San Diego. On arrival there, the Minister was escorted from the station to his hotel by a squadron of the first cavalry of the United States. Afterwards a special parade of the United States Marine corps battalion was given in Mr. Burrell's honour, after which he reviewed the command.

THE CEREAL DIVISION.

NEW VARIETIES AND SELECTIONS OF CEREALS.

BY CHARLES E. SAUNDERS, PH.D., DOMINION CEREALIST.

THE practice of numbering new varieties and selections of grain, instead of giving them names, when introducing them to the public, originated, I believe, at the Minnesota Experiment Station about twenty years ago. Since that time it has been adopted by other institutions and has now become quite popular. This system has obvious advantages from the point of view of the experiment station. It keeps the name and work of the station well to the front and saves the trouble of choosing good names. The disadvantages are, however, very great. Numbers are always difficult to remember and easy to alter by mistake. Besides, when one is dealing with a selected strain of an old and well known variety of grain, it is quite unfair to the public—to say the least—to drop the original name of the variety, and thus hide the identity of the selected strain, which often differs scarcely at all from the parent sort.

For instance, a selection from the common kind of spring wheat, Blue Stem, was introduced under the name Haynes' Blue Stem. Such a designation was rational and satisfactory, retaining as it did the name of the variety and the name of the experimentalist who made the selection. But when a further selection was made from this and was introduced as "Minnesota No. 169," the fact that it was still essentially the old, familiar Blue Stem—with its serious defects of lateness and liability to rust—was obscured, and the public was given the false impression that a remarkable discovery of a new wheat had been made. Such a false impression was of course not intended, but it was inevitable in the system of number-

ing adopted. This latter objection is not applicable where an actual new variety, produced by cross-breeding, is being introduced; but even then the use of a number, without a name, is primitive and unsatisfactory.

Of late years these numbers have come into such general use that any institution which does not employ them is in danger of giving the impression that it has accomplished very little and has no new varieties or selections to its credit. It therefore seems necessary to adopt this system, in a modified form however, in connection with the cereal breeding work carried on at Ottawa by the Dominion Cerealist. The writer has assigned numbers to all the more important cross-bred varieties and selections which he has introduced. Some of these are of his own breeding, and all the others are his selections from earlier cross-bred sorts or from commercial varieties. These numbers are to be regarded as an addition to, rather than a substitute for the names, which will be carefully retained.

In order to avoid an absurdly long designation, only the word "Ottawa" is prefixed to the number, the words "Central Experimental Farm Number" being understood. The numbers adopted do not follow each other regularly, because the system of records for cross-bred varieties which has been in use for many years has indicated to a certain extent the numbers which should be adopted.

The following list includes all the sorts to which Ottawa numbers have thus far been assigned. A few of the varieties here mentioned have lately been dropped from the lists of recommended sorts, but they are all good. Many of them are the leading varieties before the public to-day:—

VARIETIES OF CEREALS.

SPRING WHEAT.

<i>Old Designation.</i>	<i>New Designation.</i>
Alpha Selected.....	Alpha, Ottawa 1.
Percy, Selection A....	Percy, Ottawa 2.
Huron Selected.....	Huron, Ottawa 3.
Preston, Selection H....	Preston, Ottawa 4.
Stanley, Selection A....	Stanley, Ottawa 5.
Bishop, Selection A....	Bishop, Ottawa 8.
Chelsea.....	Chelsea, Ottawa 10.
White Fife, Selection C....	White Fife, Ottawa 11.
Yellow Cross.....	Yellow Cross, Ottawa 14.
Marquis.....	Marquis, Ottawa 15.
Early Red Fife.....	Early Red Fife, Ottawa 16.
Red Fife, Selection H....	Red Fife, Ottawa 17.
Early Russian.....	Early Russian, Ottawa 40.
Prelude.....	Prelude, Ottawa 135.
Pioneer.....	Pioneer, Ottawa 195.

OATS.

Eighty Day, Selection B.....	Eighty Day, Ottawa 42.
Daubeney Selected.....	Daubeney, Ottawa 47.
Banner, Selection B.....	Banner, Ottawa 49.

BARLEY, 6-ROW.

Manchurian, Selection A....	Manchurian, Ottawa 50.
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BARLEY, 2-ROW.

Early Chevalier.....	Early Chevalier, Ottawa 51.
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SPRING RYE.

Ottawa Select.....	Select, Ottawa 12.
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WINTER RYE.

Dominion.....	Dominion, Ottawa 13.
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PEAS.

Arthur Selected.....	Arthur, Ottawa 18.
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FLAX.

Longstem.....	Longstem, Ottawa 52.
Novelty.....	Novelty, Ottawa 53.

ORIGIN OF VARIETIES.

A few words of explanation in regard to the origin of some of the varieties seems desirable. About half of those mentioned are new cross-bred sorts, while the remainder are selections from old varieties.

Early Red Fife wheat is a distinct selection from Red Fife, easily recognized and ripening usually about a week before the ordinary type. Unfortunately this advantage is accompanied by a greater susceptibility to rust in some climates. However, Early Red Fife has an excellent record in the drier parts of Saskatchewan and Alberta.

Early Russian wheat is a selection from a variety of Russian origin. It is similar to White Russian in some respects but ripens earlier.

The *Eighty Day oat* is a selection

from the commercial oat commonly called Sixty Day or Orloff. The selected strain is fully as early as the parent. It ripens in about eighty days at Ottawa. It has short straw and small kernels, but usually gives a very fair crop. It is of particular value in cases where great earliness is essential.

Manchurian barley is a selection from Mensury.

Early Chevalier barley is an early ripening strain selected out of French Chevalier.

Longstem is an unusually tall type selected out of common flax, and Novelty, which promises to give a very good yield of seed, is a selection from Novarossick.

Full descriptions of most of these Ottawa varieties and selections have been published in the annual reports of the Experimental Farms.

THE DAIRY AND COLD STORAGE BRANCH.

PROBABLE SCARCITY OF RENNET FOR THE MANUFACTURE OF CHEESE.

BY J. A. RUDDICK, COMMISSIONER.

DURING the last 30 years, the rennet used by Canadian cheesemakers for the curdling of milk has been procured in the form of an extract prepared from calves' stomachs. The stomachs have come chiefly from continental Europe and especially from Germany. This supply is now stopped and it seems quite likely that before the war is over Canadian cheesemakers may have some difficulty in securing sufficient supplies of rennet extract to meet their requirements.

Before the introduction of the commercial extract of rennet the cheesemaker used to prepare his own extract by soaking the calves' stomach in water. It must be admitted, that judged by modern standards, there were very great objections to this method as the older cheesemakers will easily remember. However, in case of necessity through failure to secure the prepared extract in sufficient quantities it would be quite practicable to revert to the old practice.

For some years previous to the introduction of the rennet extract cheesemakers were able to secure what was known in the trade as Bavarian "rennets". These were calves' stomachs that had been carefully prepared and dried so that they could be kept without deterioration for some time. In still earlier days it was the practice to secure the calves' stomachs from the farmers supplying milk to the factory. Indeed at one time, in some districts at least, it was the rule that each patron had to furnish the cheesemaker, gratis, with as many calves'

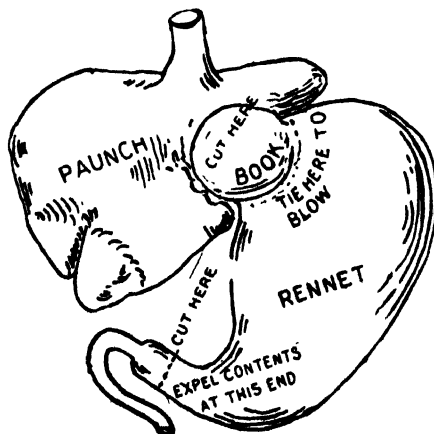
stomachs or "rennets" as he had cows in his herd. If some of the calves were raised it was necessary to secure as many stomachs from some farmer who was not sending milk to a factory.

The saving of calves' stomachs for this purpose is now practically a lost art in this country. For that reason it would seem to be advisable that some instructions should be given as to how the stomachs should be prepared for this purpose.

Canada's supply of rennet extract comes chiefly from the United States, there being no manufacturers of this article in Canada.

Chr. Hansen's Laboratory, Little Falls, N.Y., one of the principal manufacturers of rennet extracts, gives the following directions for saving and preparing calves' stomach for this purpose:—

Butchers or Farmers, many of whom have handled rennets in the old countries and are familiar with their preservation, can make a good



business of collecting and preparing rennets in this country where they have heretofore mostly been thrown away.

Only the rennets from sucking or milk-fed calves are valuable. The stomachs of calves raised on grass or other solid food are not good for the purpose.

DIRECTIONS.

When the calf is killed, immediately cut out the rennet, leaving a portion of the third stomach (the book) attached to it.

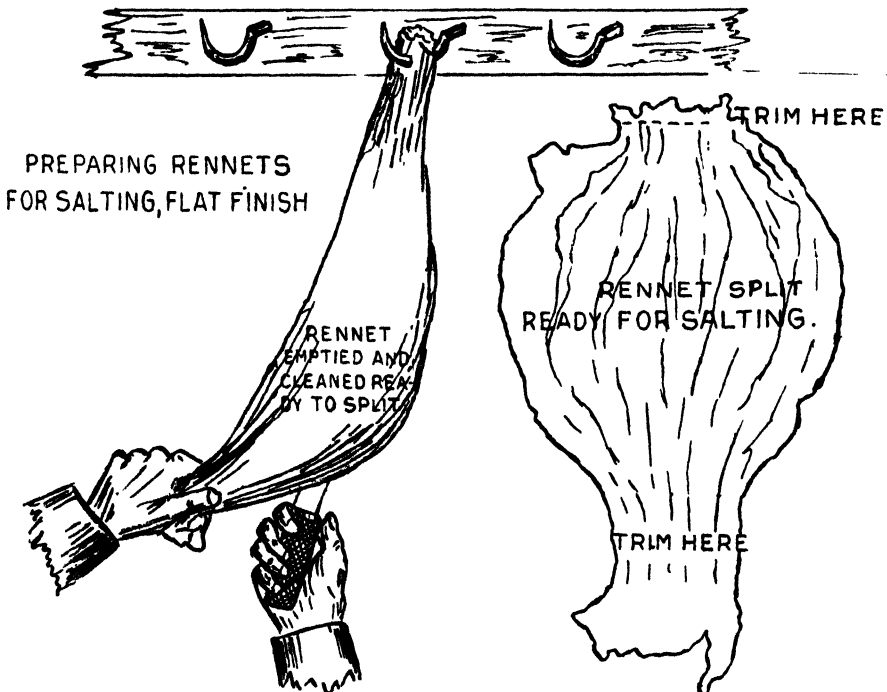
Carefully squeeze out the contents of the rennet (consisting of coagulated milk or other partially digested food), but do not turn the rennet inside out or wash it, as that would cause a loss of part of the ferment. Rinse off any dirt from the outside (but not inside) and trim off any adhering fat.

Either of the following methods may be used for preparing the rennets for shipment to the Laboratory.

Blowing up the Rennets.—Tie up the opening in the large end, applying the string at the narrow passage between the third stomach or book, and the rennet. Insert in the opening of the long neck at the other end a small tube of glass or any other material, blow up the rennet as hard as possible, like a football, and tie up with a string under the tube. Where many rennets are handled it is convenient to have a pointed tube connected with air-pressure to inflate them. The long, narrow neck contains but little of the ferment and may be cut off after drying.

Hang the inflated rennets to dry in a draughty shed or a warm, dry room, but do not expose them to more heat than that of an ordinary warm room. Never hang rennet in the open, exposed to the sun.

Where a fan can be used to create draft it will help dry the rennets quickly, and the process should not take more than a week. They should not be left moist long enough to mold or putrefy, and care should



be taken that they are not infested with maggots or insects after being dried and bundled for shipment—i.e. they should be thoroughly dried and carefully protected from flies and other insects.

When a sufficient number of thoroughly dried rennets have accumulated, cut off the neck and let out the air; tie up the rennets in bundles of 25 or 50, and pack in cases or barrels.

Fresh Salted.—When it is not convenient to blow up and dry the

rennets, they may be prepared for immediate shipment by splitting open and salting.

Squeeze out the contents of the stomach, trim off the fat, split open and cut off book and small end. Salt thoroughly on both sides, using sufficient, so that after allowing them to drain, there will still be plenty of dry salt left between the rennets. Leave them in a cool place to drain over night, then pack for shipment in a tight tub or barrel.

THE ENTOMOLOGICAL BRANCH.

THE INSECTIVOROUS HABITS OF THE MOLE IN BRITISH COLUMBIA.

BY, R. C. TREHERNE, B.S.A., FIELD OFFICER, ENTOMOLOGICAL LABORATORY, AGASSIZ, B.C.

WHILE no definite experiments have been pursued on the insectivorous habits of the common field mole, evidence is accumulating which indicates that this animal is sometimes of a great deal of value to the farmer in the control of his insect pests. The unsightly mole hills in lawns and gardens, of course, immediately class it as a nuisance. The farmer also condemns it for its habit of 'running' under the root systems of his crops and plants. Corn hills, strawberry plants, clumps of roots in the herbaceous border may be lifted and disturbed to such an extent that the wind and sun can reach the roots often causing death by drying out.

Despite these objectionable features, the fact must be borne in mind that soil-infesting insects, such as wireworms, cutworms, root-maggots, weevil larvae, etc., are readily devoured and, as it would appear, are the prime reason for the presence of moles in a piece of land.

We are indebted to Mr. E. M. Anderson, Zoologist, of the Provincial Museum, Victoria, B.C., for the fol-

lowing reply to a letter regarding the species present in the Lower Fraser Valley of British Columbia. "I may say two species occur on the Lower Fraser, viz., Townsend's mole (*Scapanus townsendii*, Bach), and Gibb's mole (*Neurotrichus gibbsii*, Baird). The latter is the commoner of the two, ranging from Burrard Inlet as far east as the Okanagan, while to my knowledge *S. townsendii* has been recorded only at New Westminster and Burrard Inlet. The two cannot be mistaken, as *S. townsendii* is about six inches in length, while *N. gibbsii* is only three."

From this we may judge, that the species we have special reference to, in this note is *Neurotrichus gibbsii*.

During the investigation on the life history of the Strawberry Root Weevil in the Lower Fraser Valley during the summers 1912, 1913, it was considered that the mole was probably its most important predatory enemy. An account of its habits in relation to the weevil larvae with illustrations, may be seen in Bull. No. 18, (Second series, Experimental Farms Branch, Depart-

ment of Agriculture, Ottawa), on the Strawberry Root-Weevil, pages 29, 30, consequently it will not be necessary to say anything else but draw attention to it.

During the past summer of 1914, a moderate outbreak of the Variegated Cutworm, *Peridroma saucia*, occurred in the Lower Fraser Valley and we had further occasion to note the habits of moles, in connection with the larvae of this moth. At points where the cutworms were most numerous the foliage of red currants, cabbages, turnips and mangels was freely devoured. In the red currant plantation on the grounds of the Experimental Farm, Agassiz, B.C., as many as 60 larvae were taken at one time from around an individual bush. Each red currant bush suffered damage in equal proportion and the average number of larvae taken from several bushes examined varied between 50 and 60. At the time these examinations were made it was noted that a mole 'run' passed beneath each of several bushes. By passing the hand along these 'runs' it was observed that the animal had moved in practically a direct line from bush to bush, at times encircling the outer roots and at others passing under the mainroots. The average depth of the 'run' varied from 3-6 inches, consequently from circumstantial evidence, the presence of the mole was accounted for by the amount of animal food (larvae) available.

In the cabbage plantation as in the rows of turnips, the 'runs' were noticed to have passed from plant to plant for quite a considerable distance in the row, where cutworm larvae abounded. In the cabbage rows particularly, it was noted that frequently a blind alley leading to the roots of the plant could be followed, returning again to the main

'run' which passed along the length of the row.

In the sections of the cabbage and turnip plantations which did not suffer from cutworm attack to any appreciable extent, 'searching' burrows or trails, leading to no apparent destination, could be seen. This was interesting as it indicated that those burrows, which followed a definite plan of plant visitation, showed a positive preference towards the presence of larvae.

Raillet, a French author, informs us that the mole is mainly an animal feeder and only under starvation conditions does it devour vegetation. He has also estimated that a mole is capable of eating twice its weight of animal food in a day.

In a recent study of the European Mole, (*Talpa europea*), in Great Britain, White analyzed the stomachs of 100 specimens. It was found that earth-worms and leather-jackets, which are root destroying larvae, constituted the chief items of the animal's diet, which was made up chiefly of the following; earth worms in 92 per cent of the stomachs, leather-jackets in 87 per cent, centipedes in 50 per cent, wire worms in 41 per cent.

Other authors, who have studied the habits of moles, in general are unanimous in the belief that vegetable matter in the stomachs of moles is accidental rather than intentional, and some have shown that moles may be readily starved to death by feeding only on vegetable food.

Consequently, with these facts before us, we are correct in assuming that the insectivorous habits of the mole in British Columbia are important aids to the farmer in the control of soil-infesting insect pests, and unless they are present in exceptional numbers, the mole's good points in all probability outnumber the bad.

NOTES.

Mr. J. R. Gareau has been appointed a Field Officer and Inspector of the Entomological Branch in the place of Mr. H. F. Hudson who has left the branch to join the Second Canadian Contingent in which he is serving with the 16th Battery of the Canadian Field Artillery. Mr. Gareau is a graduate of the Quebec Forestry School, and since graduating has been employed in the Provincial Forest Service of British Columbia and has also taken courses in Entomology in the Leland Stanford University, California. He will be stationed at the branch's field laboratory at Strathroy, Ont., and ultimately he will be assigned to the Division of Forest Insects.

THE WAR AND IMPORTED NURSERY STOCK.

It was expected that there would be this season a very serious diminution in the quantity of nursery stock imported from Europe. The decrease has been much less than was anticipated. A large amount of the Belgian stock was shipped in the early days of the war and as it

happens the nursery section is not in that portion of Belgium that has been the scene of the most active military operations. The Holland shipments have suffered very little and the Dutch nurserymen who with the Belgians, supply the greatest proportion of the azaleas used for potting purposes, and bay trees, etc., are actively soliciting trade in these classes of nursery stock and in bulbs. It is anticipated that the withdrawal in France of so many men for active service will materially affect the French nurseries which supply the bulk of the seedling stock used by our nurserymen for grafting purposes. Nevertheless, every effort is being made to produce seedling stock in as large quantities as possible.

It is almost certain, however, that the effect of the war will be seriously felt next season both on account of the reduced production and the increased cost of sea transport and it would be well for Canadian nurserymen and florists to be prepared to meet the shortage in ornamental, fruit and other classes of nursery stock now imported from European countries.

THE FRUIT BRANCH.

THE FUTURE OF APPLE GROWING.

BY DONALD JOHNSON, COMMISSIONER.

I have travelled over all the fruit producing districts of Canada during the past year and have been amazed at the huge plantings which exist. I knew before that Canada had some 25,000,000 fruit trees, but had never realized what these figures meant until I came in contact with the orchards and it was pressed home to me that there was a day not far distant when Canada

would be face to face with over-production. In the famous Annapolis Valley of Nova Scotia, not more than 50 per cent of the apple trees are bearing and those that are bearing are still young and far from yielding their maximum amount of fruit. The orchards are situated in a valley some 100 miles long and an average of about 6 miles wide. In this valley apples are the main pro-

duct of the land, and the good care that the growers are giving their trees assures us that Nova Scotia will yet produce twice as much and perhaps four times as much fruit before many years. New Brunswick is also planting and on the sloping banks of the St. John River are thousands of acres of young orchard that are not yet producing. Quebec is also forging to the front once more and many acres of Fameuse and McIntosh Reds are found there producing an apple of superb quality and appearance.

In some districts of Ontario the plantings have greatly increased, while in others San José scale has wiped the orchards out of existence. Nevertheless the fact remains that one-half of our 10,000,000 apple trees are not yet bearing.

In British Columbia, I travelled hour by hour through solid orchards, kept in a state of perfection seldom seen in Ontario. It is true that they are producing only some 1,000 car-loads of apples this season, yet it is only the beginning as two-thirds of the trees are under five years of age and the other third practically only beginning to bear. The North-West states of Washington, Oregon and Idaho are in like position, producing now some 15,000 cars.

It is time for us to take stock of the future in the growing of fruit to see where we stand. I am of opinion that, unless we can greatly increase consumption, there are enough fruit trees planted in Canada to supply its needs for many years to come. Let us take care of the trees we have, produce the finest grade we can, and I believe there is a fair return assured under normal conditions.

My advice is to curtail planting until such time as the consumption of fruit increases to meet the plantings of the present day. If we are going

to have two or three times as much fruit in the next ten or fifteen years as we have at the present time, it is going to take no prophet to tell the final outcome.

I believe that the fruit growers of Canada are now roused to the necessity of caring for their orchards in a way never undertaken before. Commercial orchards everywhere are being given scientific treatment which was never practised in the past, and the large orchards, planted as a commercial venture, should continue to receive proper treatment until their fruits are placed on the market.

A more important question than that of production is now before us—that of marketing. Up to the present time very little has been done in this particular line. It is true that the late Mr. McNeill did perform a most valuable work for the fruit growers of Canada in preaching co-operation from one end of the Dominion to the other. The result of his mission has been the organization of large co-operative associations, scattered throughout the various provinces, which have long ago justified their existence. As a member of one of these associations I can testify that many a man has been made rich through his orchard, the products of which in former years went to enrich the dealers. To-day market conditions are such that much fruit is left unharvested, yet the co-operative associations are in most cases receiving a fair return for their fruit. This, to my mind, is the first and most important step in marketing, the organization of the producers. Now the time has come for these associations to go a step further, that is, to proclaim to the world the quality of their fruit, or in other words to advertise.

CROP REPORTING FOR 1915.

BY F. H. GRINDLEY, B.S.A., ASSISTANT TO THE COMMISSIONER.

DURING the coming year it is the intention of the Fruit Commissioner to keep fruit growers, and other interested parties, fully informed as to the condition of the various crops, the state of the home and foreign markets, prices, and so on. This information will be received in Ottawa by telegram at regular and frequent intervals between May and December. Probably two of these "Telegraphic Reports" will be prepared every week, sent at once by wire to the Associated Press, and by mail to all co-operative associations, large growers and dealers, in fact to anyone who applies for them. There will also be

published, once a month, a more lengthy report which will include a summary of all telegraphic reports published during the preceding month and, in addition, information which will be received from reliable growers in all the fruit producing provinces. This latter report will also be widely distributed, mainly to those who are not receiving the telegraphic reports.

As the Fruit Commissioner desires these reports to reach as many interested parties as possible, anyone desiring them is asked to send his name and address at once to "The Fruit Commissioner, Ottawa, Ont."

THE SEED BRANCH.**BETTER SEED AND PRODUCTION.**

BY E. D. EDDY, B.S.A., CHIEF SEED INSPECTOR, OTTAWA.

IN order that the desired increased grain production in Canada may be realized to the fullest possible extent this year, it is essential that the selection and preparation of seed be given careful attention. Unfortunately, the importance of good clean seed in relation to the yield and quality of crops harvested is not generally appreciated. On the contrary, the value of Canada's grain crops is enormously lower each year through poor seed.

The grain used for seed is seldom cleaned or graded except to be passed through a fanning-mill once or twice. Often not even this is done, and in many cases the mills used are not equipped with the proper screens and but little improvement is effected. As a result, weed seeds are sown with a large proportion of the seed grain in such variety and numbers as to ensure strong weed growth

and thereby preclude the possibility of producing reasonably clean crops with maximum yields and highest quality. Very little attention is paid to sowing the most suitable varieties or to the sources of seed supply. Much preventable loss is sustained through failure to treat seed for the prevention of smut. In many cases, especially with oats, the yield is greatly reduced by sowing seed weak in vitality through frost injury or failure to remove the small immature kernels by thorough screening.

These unfortunate conditions are shown to exist to a surprising extent by an enquiry which was conducted by the Seed Branch. In the spring of 1913, seed inspectors collected 978 samples of oats, 506 of spring wheat and 408 of barley representing as accurately as possible the average quality of the seed grain used by the

farmers throughout Canada. These were forwarded to the seed laboratory at Ottawa with information about the lots of seed represented in regard to variety, sources of supply, rates of seeding, treatment for smut prevention, cleaning and selection. From the analysis of these samples and the compilation of other information secured, some results not highly creditable to Canadian agriculture are shown. The following is a summary of the outstanding features:—

INEFFICIENT CLEANING.

The lack of attention to properly preparing seed grain is shown by the fact that about 11 per cent of the samples of wheat, oats and barley collected represented seed which was being sown with no cleaning whatever after coming from the thresher. Considerably less than one per cent received any hand-selection. The other lots were reported as being cleaned with a fanning-mill, but in most cases the grain was only put once through a badly equipped mill and but little improvement effected. One sample of oats reported as cleaned with a fanning-mill contained over 5,000 weed seeds per pound, mostly wild mustard. Another contained over 7,000 per pound, mostly spurrey. These seeds could have been almost completely removed by a mill equipped with proper screens and well operated. There were many other instances illustrating the very general lack of appreciation of the importance of cleaning seed and of equipment for doing it.

To secure the best possible sample for seed, most grain should be reduced in bulk from one-third to one-half by thorough cleaning and grading. The grain used for seed in Canada that is cleaned at all is seldom put through a fanning-mill more than once or twice, and usually the mill is not equipped to do good work. Many of the mills in use have only a few screens and riddles designed for cleaning grain for market and are

entirely unsuited for properly preparing seed. More attention to cleaning with a small investment in suitable screens would greatly increase the prospect for increased production next season.

WEED SEEDS SOWN WITH GRAIN.

The extent to which weeds are sown with seed grain through lack of cleaning is shown by the tests of the samples analysed.

Oats: Of the oat samples collected 56 per cent contained seeds of weeds classed as noxious under the Seed Control Act, the average number per pound being 76 and the highest 4,838. The sample containing the largest number was from a home-grown lot which had been run through a fanning-mill in preparation for seeding. The efficiency of the cleaning may be judged from the fact that the oats contained 4,800 wild mustard seeds and 38 Canada thistle seed per pound. They were sown at the rate of two bushels per acre which would put over 2,000 noxious weed seeds per square rod on the land. The most prevalent noxious weed seed in oats was wild oats which occurred in 347 out of the 978 samples at the average rate of 83 per pound. Next in order was ball mustard, occurring in 120 samples at the average rate of 53 per pound and third, wild mustard in 93 samples at the average rate of 209 per pound.

Weed seeds other than those classed as noxious were found in 88 per cent of the oat samples, the largest number being 6,954 per pound and the average 239. The sample containing the largest number was also from a so-called cleaned lot which had been passed through a fanning-mill. The most prevalent weed seed other than those classed as noxious in oats was black bindweed or wild buckwheat which occurred in 678 samples at the average rate of 116 per pound. Lamb's quarters was next, occurring in 354 samples at the average rate of 100 per pound

and lady's thumb third, occurring in 141 samples at the average rate of 43 per pound.

With the weed seed content shown and the rate of seeding reported, weed seeds would be placed on the land seeded to oats at the average rate of 44 noxious and 138 other sorts per square rod.

Spring Wheat: Of the samples of spring wheat collected, 54 per cent contained noxious weed seeds, the average being 79 per pound. One sample contained 11,528 noxious weed seeds per pound, mostly wild mustard. This represented a lot which was being sown without cleaning and at the rate of seeding reported noxious weed seeds would be placed on the land with the wheat at the rate of 8,600 per square rod. The most prevalent noxious weed seeds in wheat were: purple cockle in 127 out of 506 samples at the average rate of 27 per pound; wild oats in 118 samples, 25 per pound; ball mustard in 57 samples, 55 per pound; wild mustard in 52 samples, 358 per pound.

Weed seeds other than those classed as noxious were found in 90 per cent of the samples, the average being 343 per pound. One sample representing a lot which was being sown without cleaning contained 17,415 per pound and also 153 noxious sorts. This seed was sown at the rate of $1\frac{1}{2}$ bushels per acre which would put about 9,800 weed seeds on each square rod. The order of prevalence was the same as with oats.

With the weed seed content shown and the rate of seeding reported, weed seeds would be placed on the land sown with spring wheat at the average rate of 50 noxious and 220 other sorts per square rod.

Barley: With barley the noxious weed seed content was considerably lower than with oats or wheat although the number of other weed seeds was higher. Fifty-seven per cent of the samples contained

noxious weed seeds, the average number being 53 per pound. One sample contained 2,539 noxious weed seeds per pound mostly ball mustard and also 2,268 other kinds.

Weed seeds other than those classed as noxious were found in 86 per cent of the samples, the average per pound being 445 and the highest in any sample 9,968. The order of prevalence with both noxious and other weed seeds was the same as with oats.

With the weed seed content shown and rate of seeding reported, weed seeds would be placed on the land seeded to barley at the average rate of 32 noxious and 270 other sorts per square rod.

SOURCES OF SUPPLY.

Of the lots of seed oats, spring wheat and barley on which information was obtained in regard to sources of supply, 80 per cent were home-grown, 13 per cent secured from other farmers and 7 per cent from dealers. The proportion of farmers who secured their seed from dealers was largest in Quebec, Nova Scotia and New Brunswick. In Quebec the proportion of seed wheat from dealers was especially large. Its quality is indicated by the impurities in the wheat sampled in Quebec which contained on the average over five times as many noxious weed seeds per pound as that from any other province.

Most of the grain purchased from dealers and used as seed in the eastern provinces comes from Western Canada. As a rule, it is ordinary commercial grain that has had no special cleaning or selection. It almost invariably contains large numbers of weed seeds and the vitality of oats is often injured by frost. The practice of openly selling this grain as seed has been largely checked through the enforcement of the Seed Control Act but it is still disposed of in large quantities on sample or under commercial grades

without being definitely represented as seed. In this way the dealers protect themselves against legal responsibility and the farmer who buys this grain and uses it for seed does so at his own risk, and usually with disappointing results. If farmers feel that they cannot afford to pay more than commercial grain prices for seed, they should at least take the precaution to clean it thoroughly and in the case of oats test the vitality.

The seed grain supplied by reliable seed houses is usually well cleaned and of good quality.

VARIETIES.

It has been repeatedly demonstrated that certain varieties of grain give the best returns in particular districts. The lack of attention to the selection of the most suitable varieties is shown by the fact that over 40 per cent of the farmers from whom samples of seed oats, wheat and barley were collected did not know the variety names of the grain they were growing. Information could be secured by any farmer from the nearest experimental farm in regard to the best varieties to sow under stated soil and climatic conditions.

TREATMENT FOR SMUT PREVENTION.

Slightly over 50 per cent of the samples of oats and spring wheat represent lots of seed which were being treated for smut prevention. In the Prairie Provinces 90 per cent of the wheat was being treated and 70 per cent of the oats. In Ontario only six samples of oats out of 164 collected represented lots that were being treated. In Quebec there were none. In neither Ontario or Quebec were any samples collected from wheat being treated. The proportion of oats and wheat treated was also low in the Maritime Provinces, although larger than in Ontario and Quebec. Throughout Eastern Canada the loss through smut is quite heavy, especially in some districts,

and the value of the crops would be considerably increased if treatment for its prevention were more generally practised.

In 88 per cent of the cases where the method of treatment was specified, formalin was used in preference to bluestone.

GERMINATION.

Germination tests of samples collected indicate that on the whole the vitality of the seed used was fairly good, although a considerable proportion of the lots must have given disappointing returns through failure to produce a full stand. Among the most common causes of low vitality in seed grain are frost before ripening, immaturity, weathering and heating. The germination strength of grain is often greatly lowered by the presence of small, immature and shrunken kernels which produce weak plants or none at all if seeding conditions are unfavourable to growth. Such kernels are especially prevalent in oats. All grain intended for seed should be thoroughly screened and graded to retain only the strong, plump kernels. If there is any question of the vitality being injured, a germination test should be made.

INCREASED PRODUCTION POSSIBLE.

When collecting the samples on which the foregoing figures are based, every effort was made to secure seed which would fairly represent what was being used under average farm practice. However, it is recognized that unintentionally the inspectors may have secured extreme rather than representative samples in some instances. Occasionally samples were taken from lots which were yet to be passed through a fanning-mill before sowing, consequently, the figures given in regard to weed seeds in the grain sown are inaccurate to the extent to which these impurities were removed from the lots which were cleaned after being sampled.

But comparison of uncleaned samples with those that had been put through a fanning-mill indicates that the general result is not greatly affected by this, as in most cases little improvement was accomplished by the attempt at cleaning.

After liberal allowance is made for all such inaccuracies, it is clear that much could be done toward increasing grain production by more attention being given to the selection and preparation of seed. It is impossible to state definitely what increase could be realized if the means at hand or easily obtainable were used to, the fullest extent toward securing better

seed grain, but, in view of the conditions shown to exist, five per cent increase would seem to be a conservative estimate. On the basis of the yields given by the Census and Statistics Branch of the Department of Trade and Commerce and export valuations, Canada's 1913 crop of grain and flax, exclusive of corn, was worth over \$485,000,000. An increase of five per cent would have added over \$24,000,000 to the value of the crop. This year, with the increased area which will be seeded and the probability of higher prices, there are even greater possibilities.

THE LIVE STOCK BRANCH.

NOTES FROM THE POULTRY DIVISION

BY W. A. BROWN, B.S.A., M.S.

THE activities of the Poultry Division, with regard to Egg Improvement, have been directed towards interesting the three main classes primarily concerned in the trade, the producers, the wholesale dealers, and the consumers, in the question of quality in eggs. The work was first systematically undertaken in the spring of 1913. Good progress was made during that year, but the most consistent effort was put forth in 1914.

The most important advances have been made to the wholesale trade, for the reason that early in the work it was recognized that the case-count system of buying eggs constituted a distinct injustice to the progressive producer. It was further evident that the wholesale trade who graded the eggs and knew the quality had at their disposal a most effective means for improvement; namely, the making of a difference in price, not only between the prices paid for good and bad eggs, but also between the prices paid for the various grades of good

eggs. Recommendations were, therefore, made to the trade, with the view of inaugurating a system of 'quality payment' which would ensure to the producer, who took pains to market a high grade of eggs, a premium commensurate with the extra time and effort put forth.

As was expected, such a radical change in business methods met with considerable opposition at first. The chief difficulty encountered, however, was the lack of definite standards for grading eggs. Some firms, which had made a special study of the subject, have from the commencement of the campaign, based their quotations on the system of grading followed in the general conduct of their business, but the trade as a whole, throughout Canada, owing to lack of standards, have, to date, adopted 'quality payment' only to the extent of purchasing eggs on a 'loss off' basis, i.e., nothing is allowed for the bad eggs, and the eggs unfit for use.

As noted in THE AGRICULTURAL GAZETTE, for August, No. 7, Vol. 1,

1914, the trade in the provinces of Alberta, Ontario, and Quebec have been particularly responsive to the advances made in this connection, and, further, a number of firms in Calgary, Edmonton, Toronto, and Montreal have regularly based their quotations on a graded basis.

The progress has been not so great in Manitoba, Saskatchewan, and the Maritime Provinces, owing to the fact that the eggs are largely handled by wholesale grocers who are mainly interested in the egg business as a convenient means of collection. It has been supported, however, in those provinces, by all the firms who make a practice of candling their eggs.

It also became evident during the summer of 1913 that before the advances mentioned above could be made effective throughout the Dominion, a strenuous educational campaign leading to an improvement in candling and grading was necessary.

The art of candling eggs is not difficult, but, upon investigation, it was surprising to learn that few country merchants and local egg buyers were conversant with this system of grading. In fact, owing to the facility with which bad and partially incubated eggs may be detected when passed before a light in a darkened room, special attention has been directed towards interesting consumers more generally in the art of candling. During 1914 special efforts have been put forth to interest consumers and the trade generally in this matter. It has been taken up from four different standpoints:

First: The distribution of pamphlets on the subject of egg candling.

Second: The free distribution of simple, convenient, inexpensive cardboard egg candling appliances.

Third: The giving of Candling Demonstrations at fairs and meetings, and through the medium of a Demonstration Car.

Fourth: The establishment of Candling Stations in centres where

co-operative associations have been formed.

Every province, and practically every large town and city in the Dominion has been visited. The work is still going on, and it has been surprising the interest that has been displayed, not only on the part of consumers and producers, but also on the part of the wholesale and retail trade as well.

At the majority of the fairs, and on the Demonstration Car which made some 85 stops on the main lines of the Canadian Pacific and the Intercolonial Railways in the provinces of Ontario, Quebec, New Brunswick and Nova Scotia, the Candling Demonstration has been accompanied by an Egg Exhibit which graphically illustrated, by means of models, cross-sections, and otherwise, the right and wrong methods of marketing eggs.

During the year 1914, 130,000 copies of Pamphlet No. 3, of the Poultry Division of the Live Stock Branch, entitled, "The Candling of Eggs" and 100,000 Candling Appliances have been distributed upon request, and over 150,000 people, the majority of them adults and heads of families, have been given an opportunity to actually view the candling of eggs in the candling booths used in connection with these demonstrations.

The following is a brief statement of the approximate number of people who have actually attended the candling demonstrations at the points mentioned:

Western Fairs	45,000
Miscellaneous Eastern Fairs, including the Canadian National	76,000
Demonstration Car, points on lines of the Canadian Pacific Railway	24,000
Demonstration Car, points on Intercolonial Railway	7,500
Total..	152,500

It is impossible to judge accurately at present, the full benefits accruing from this work. From the marked interest apparent in the work as a

whole, the surprise expressed at the comparative simplicity of the test, and the fact that so many people are to-day actually using the Candling Appliances in their everyday work, it is safe to say that unquestionably the instruction given in this way will have a potent and far-reaching effect upon the improvement of the Canadian egg trade. Three years ago, it would be difficult to find a country merchant that made a practice of candling eggs; to-day, it is the rule rather than the exception.

During the past year, consistent effort has also been directed towards arriving at standards which would be suitable for adoption in connection with the campaign for 'quality payment.' Prof. W. R. Graham, of the Ontario Agricultural College, a member of the International Committee on Market Poultry and Egg Standards, appointed by the American Poultry Association, and National Poultry, Butter and Egg Association, has also been giving this matter his serious consideration. It is of special interest, therefore, to be able to announce at this time, that at the Third Annual Convention of the Canadian Produce Association, held at the Ontario Agricultural College, Guelph, on the 11th and 12th of January last, standards for Canadian

eggs were adopted. A copy of these standards, together with the definition of each Grade is appended hereto.

It also may be of interest to some to learn that in connection with the development of standards a strong feeling has been growing, not only on the part of interested producers and consumers, but also on the part of many distributors in favour of Egg Trade Legislation, similar in nature to the Fruit Marks Act. This matter has a special signification at the present time, owing to the fact that, following the unprecedented growth of the poultry industry in recent years, Canada is gradually changing from an importing to an exporting country insofar as eggs are concerned.

While no special reference has been made in this article to the part which this Branch is taking in the encouragement of producers to improve the quality of eggs, it has previously been pointed out that the efforts put forth in this direction have been directed specially towards the encouragement of co-operative marketing. Complete statistics with regard to the progress made along this line are now being prepared, and a detailed report will be given in these columns at an early date.

STANDARDS FOR CANADIAN EGGS.

THE standards for Canadian eggs as adopted by the Canadian Produce Association at the third annual convention, held in Guelph, January 11th and 12th, 1915, are as follows:—

CLASSES AND GRADES.

Classes:	Fresh Gathered.	Storage.	Cracked and Dirties.
Grades:	Specials. Extras. No. 1's. No. 2's.	Extras. No. 1's. No. 2's.	No. 1's. No. 2's

Allowance for deterioration in transit 10 per cent, i.e., eggs should grade at point of delivery 90 per cent of grade named at point of shipment.

DEFINITIONS OF GRADES.

Specials: - Eggs of uniform size weighing over 24 ounces to the dozen or over 45 pounds net to the 30 dozen case, absolutely clean, strong and sound in shell; air cell small, not over $\frac{3}{16}$ of an inch in depth* (measure from top of cell to outer rim); white of egg to be firm and

clear and yolk dimly visible, free from blood clots.

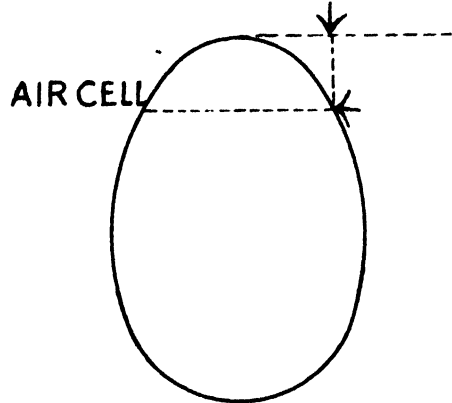
Extras.—Eggs of good size, weighing at least 24 ounces to the dozen or 45 pounds net to the 30 dozen case; clean, sound in cell; air cell less than $\frac{3}{8}$ inch in depth* (measure from top of cell to outer rim) white of egg to be firm and yolk only slightly visible.

No. 1's.—Eggs weighing at least 23 ounces to the dozen or 43 pounds net to the 30 dozen case, clear; sound in shell; air cell less than $\frac{1}{2}$ inch in depth* (measured from top of cell to outer rim) white of egg to be reasonably firm; yolk may be quite visible but mobile; not stuck to the shell or seriously out of place, air cell not necessarily stationary.

No. 2's.—Eggs clean; sound in shell; may contain weak watery

eggs, and eggs with heavy yolks and all other eggs sound in shell and fit for food.

*To measure accurately the depth of the air cell, the following method should be adopted.



Measure from the points that the arrows indicate.

THE CANADIAN EGG TRADE.

The following tables are taken from Pamphlet No. 7 of the Live Stock Branch, "The Egg and Poultry Situation," that is now in press.

RELATION OF CONSUMPTION TO PRODUCTION IN THE CANADIAN EGG TRADE.

	Census of 1891.	Census of 1901.	Census of 1911.
Population of Canada	4,833,239	5,371,315	7,204,838
Poultry population of Canada.	12,696,701	16,562,084	29,548,723
Total egg production	*64,499,241 doz.	84,132,802 doz.	123,071,034 doz.
Exports of eggs	8,002,935 "	11,363,064 "	92,164 "
Imports of eggs	602,533 "	951,745 "	2,378,640 "
Total consumption	57,078,839 "	73,723,483 "	123,357,510 "
Average per capita	11.8 "	13.72 "	17.39 "

*Estimated.

CANADA'S EXPORTS AND IMPORTS OF EGGS.

	Exports.	Imports.
1912..	203,231	7,577,826
1913.	126,854	13,240,111
1914	124,002	11,274,108

THE HEALTH OF ANIMALS BRANCH.

FOOT AND MOUTH DISEASE.

BY F. TORRANCE, B.A., D.V.S., VETERINARY DIRECTOR GENERAL.

OUTBREAKS of this disease have occurred at various times and places, where the infection has been apparently carried by wild birds. In Great Britain and in Denmark, such birds as gulls, crows and rooks have been thought guilty of bringing the disease from distant sources.

The spring migration of birds to the north has now begun. Robins have already made their appearance in some parts of Canada, a month earlier than usual, and other birds may be expected to follow from time to time. Migrating birds are known to fly great distances, and it is quite possible for them to carry on their feet the contagion of foot and mouth disease.

Some lonely, isolated farm, remote from a railway or probable source of infection, might thus become the starting point of an outbreak. Without wishing to cause alarm, I desire to call the attention of the farming community to these facts, so that everyone will be on the alert, and send prompt information of anything suspicious that may be observed. The symptoms to be looked for are as follows:--

"In the early stages of the disease the animal is lame and frequently smacks its lips, and shows by the movement of its tongue that the mouth is the seat of suffering; and the saliva flows freely from the mouth. An examination of the

mouth shows the existence of vesicles on the tongue and on the inner part of the upper lip and on the pad. These vesicles show themselves in the form of a tough white skin which can be easily stripped off, and a red, raw surface is found beneath. The animal seldom refuses food, but rolls it about in its mouth, and often drops it instead of swallowing it. In most instances the feet are affected as well as the mouth, and blisters will form between the toes and on the heels between hair and hoof, causing the animal to walk tenderly, and frequently to catch up one foot after the other and shake it as if to dislodge something which was producing pain. In milch cows the teats may be affected with vesicles, especially at the opening of the milk duct. This often leads to sores and crusts being formed, which prevent the ready flow of the milk. The disease frequently exists simultaneously among the cattle, sheep and pigs of the farm."

Any owner of an animal presenting any of the above symptoms should immediately notify the Health of Animals Branch, Ottawa, and the nearest veterinary inspector.

The disease has not yet been found in Canada, and we hope to keep it out, but until the infection in the United States is eradicated, we must exercise the greatest care and take every precaution.

On page 162 of the February GAZETTE, the date of the appointment of Prof. S. B. McCready as Director of Elementary Agricultural Education in Ontario, was given as 1912, this should have been 1911.

PART II.

Provincial Departments of Agriculture.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE INCLUDING
AGRICULTURAL COLLEGES.

DEMONSTRATION ORCHARD WORK.

PRINCE EDWARD ISLAND.

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE.

ON the last day of the Short Course in Agriculture the Commissioner of Agriculture proposed to carry on definite extension work with those who would agree to co-operate with us to the extent of carrying on definite extension work under the direction of the Department of Agriculture. About thirty farmers from different parts of the province have already sent in their names, and the Commissioner proposes that our demonstration orchard work should be carried on in a similar way.

We have now a Fruit Growers' Association formed, and all who are ready to take advantage of the extension work in horticulture will be asked to join this Association; a meeting will then be held and certain definite lines of work will be decided upon. This, however, cannot be done until later in the winter. This matter will be brought before the farmers who are present at the Seed Fairs in February and March, and at various meetings held from time to time.

BY L. TENNANT, B.S.A., DISTRICT REPRESENTATIVE FOR KINGS COUNTY.

THE grant made to Prince Edward Island under THE AGRICULTURAL INSTRUCTION ACT has enabled the local Department of Agriculture to do considerable demonstration work along horticultural lines. This work included pruning, spraying, grafting, instruction in the general care and cultivation of orchards, and demonstration in the grading and packing of apples. Many of the Island orchards were set out some years ago and in several instances these orchards have become

unprofitable either on account of lack of care or the fact that many of the trees are of poor varieties. So that the question of the renovation of the orchards of the Island is an important one.

Many orchard owners have rather hazy ideas regarding the pruning of an apple tree. Too frequently they measure the success of their operations by the quantity of wood which is removed from the tree. Now the object of pruning is not to cut out a large amount of wood but to leave

as much bearing wood as possible, to have this wood evenly distributed throughout the different parts of the tree and to give each branch and twig sufficient light and air so that the fruit it bears will mature and colour

trees in many orchards are either early varieties, or varieties that do not find a ready sale. By changing these trees over to varieties that are in demand and that will keep well, the returns from a large number of



MODEL ORCHARD AT LOWER MONTAGUE, P.E.I.

properly. In our work here the cutting out of large branches was avoided as far as possible. The pruning largely consisted in thinning the outer twigs and branches. In some cases where the trees had been neglected for some time it was found necessary to remove large branches, but wherever this was done the cut was made as close to the main limb as possible and the wound was covered with a good paint.

Here and there were found trees that would be very liable to split in a high wind, or when carrying a heavy load of fruit. To prevent this the main branches on opposite sides of the tree were tied together. Screw eyes were placed in these branches between two and three feet from the crotch. These screw eyes were joined together by a loop of heavy galvanized wire which was twisted tight. By this means the tree was supported and the danger of splitting avoided.

A small amount of grafting was done in a couple of orchards. There are several instances in which top grafting could be done quite profitably. A considerable number of

orchards would be materially increased.

Demonstration work in spraying



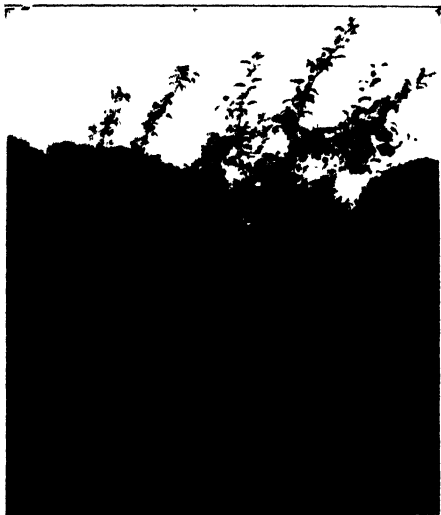
METHOD OF SUPPORTING TREES AND PREVENTION OF SPLITTING.

was done in several localities last year and was attended with good results. Home made concentrated lime-sulphur and arsenate of lead were the materials used. The orchards on the Island were all fairly free from insect attack last year so that there was not much difference in this respect between sprayed and unsprayed orchards. In a few unsprayed orchards the Oyster Shell Bark Louse is quite bad. In the control of scab, however, there was a big difference between the sprayed and unsprayed orchard. In the sprayed orchard a large percentage of the fruit was No. 1, but in the unsprayed orchard the bulk of the fruit that was marketed was of No. 2 grade and the percentage of culls often ran as high as 35 to 40. A large quantity of home made concentrated lime sulphur was manufactured at Charlottetown and sold to those wanting it at cost.

In the demonstration work in pruning and spraying I had the assistance of four young men who had some previous training and instruction along agricultural lines, either

at Charlottetown or Truro.

The photographs accompanying this article were taken in the orchard of Mr. George Annear, Lower Montague, whose father was one of the pioneers in horticulture on the Island.



WEALTHY APPLE TREE.

This tree in the orchard of John Annear, Lower Montague, P.E.I., produced 2½ bushels of No. 1 apples last autumn after being out five years.

NOVA SCOTIA.

BY P. J. SHAW, B.A., PROVINCIAL HORTICULTURIST.

TWO kinds of orchard demonstration work are carried on in Nova Scotia by the Department of Agriculture. One is in connection with the model orchards of the province and the other with the renovation of bearing orchards.

MODEL ORCHARDS.

The model orchards were planted and are cared for under the direction of the Department of Agriculture. The first two of these orchards were planted in 1901 and in succeeding years the number has been added to until there are now 36 in the province. The regulations governing the act establishing these orchards

allow two or three to a county. They are, therefore, pretty evenly distributed over the province, except that there are none in the fruit district proper.

One object of the work with these orchards is to discover the sections of the province in which the fruit growing industry can be profitably developed. It is also the aim to find out what varieties of fruit are best suited to the different localities and to give a demonstration of the best methods of planting and caring for a young orchard. Each orchard is from one to two acres in extent. The oldest this year produced 67 barrels of apples.

RENOVATION ORCHARDS.

Two years ago a fund became available from THE AGRICULTURAL AID ACT grant for the purpose of orchard demonstration. In the fall of 1913 seven orchards of bearing age were selected in different parts of the province to show what could be done by approved methods of treatment. Two of these orchards are in Lunenburg county, one in Yarmouth county, two in Cumberland county and one in Inverness county, one in Annapolis county. All except the last are outside of the fruit district.

The Department of Agriculture agrees to furnish spraying apparatus, spray materials, fertilizers and cover crop seed sufficient for the needs of a demonstration orchard of two acres, more or less, as an object lesson to encourage horticulture in that section of the county. It is also agreed that full instructions shall be given from year to year by the provincial horticulturist as to pruning, spraying, cultivating and fertilizing and all other matters pertaining to the care of a demonstration orchard. In consideration of this the owner agrees to allow his orchard to be used for demonstration purposes, and to perform all the necessary labour, according to direction, in cultivating, pruning, spraying and fertilizing the orchard. The agreement is binding for a period of five years, the fruitage of the orchard being the property of the owner.

A representative of the horticultural division visited each orchard to assist in getting the work under way. The orchards were first pruned, dead, weak, and diseased limbs were removed; the tree tops were thinned to admit air and sunlight and to encourage growth of new wood and increase the size of the fruit. The rough bark was scraped from the trunks and larger limbs to allow caustic spray to reach the oyster shell bark lice and to destroy the hibernating places of the

codling moth. Much of this work was done in the fall of 1913. A number of the orchards were in sod, some were plowed in the fall of 1913, the others as early in the spring of 1914 as possible. They were then harrowed and the harrowing was repeated every ten days until mid-summer, when a cover crop of buckwheat, vetch or clover was sown to help rot the sod and add humus to the soil. Commercial fertilizers in the form of nitrate of soda, acid phosphate and muriate of potash were applied to each orchard at the rate of 200 pounds of nitrate of soda, 500 pounds of acid phosphate and 200 pounds of muriate of potash per acre. By dividing the orchard into plots and applying the fertilizers in different combinations an effort is being made to test the value of the different fertilizers for orchard purposes.

Each orchard was given a dormant spray of lime-sulphur in the spring before the buds opened. The strength used was one gallon of commercial lime-sulphur to nine gallons of water. The trunks, main limbs and branches of the trees were thoroughly covered with the spray to kill any scale insects that might be present and to clean the trees of "moss" or lichens. Later the orchards were sprayed once before the blossoms had opened and again just after the petals had fallen to control the black spot and prevent the attacks of certain insect pests. Had there been any danger of later injury, a fourth and possibly a fifth spray would have been applied. The spray mixture used on the foliage was lime-sulphur, diluted to the summer strength, one to 30, with $2\frac{1}{2}$ pounds of arsenate of lead to 40 gallons of spray mixture.

The orchards during the past season showed an improvement in foliage and general health. The wounds began to heal well and there was a twig growth of twelve inches or more. While marked results in the yield were not to be expected the

first year, some of the owners report the heaviest crop in the history of their orchards.

In one part of the province which is naturally well adapted to apple culture but where the industry has not as yet reached the same stage of development as in the Annapolis Valley, a district representative was sent for a period of six weeks in the fall and again for a similar period in the spring. His work was to make a survey of the orchards in this district, to meet the owners individually in their orchards, to talk over problems of orchard management with

them, showing them how to perform such operations as pruning, grafting, making lime-sulphur, cleaning out of cankers and the treatment of wounds. The full range of the fruit growers' problems was dealt with from the simplest matters pertaining to production to those dealing with co-operation and marketing of fruit. Later, meetings were held at the demonstration orchards where the work of renovation was under way and where the visitors could see what was being done and take part in some of the operations.

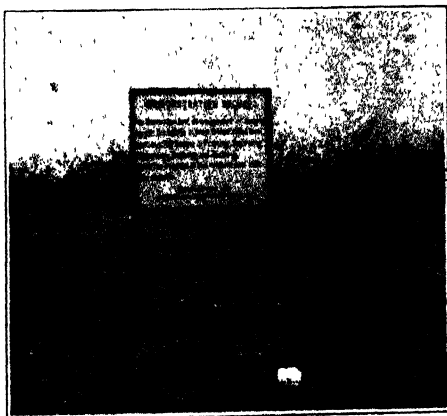
NEW BRUNSWICK.

BY A. G. TURNEY, B.S.A., PROVINCIAL HORTICULTURIST.

IN 1911, the Department of Agriculture established demonstration orchards at Lower Coverdale, Albert county; Maugerville, Sunbury county; and Douglas, York county. Additional demonstration orchards were established at Lingley, Kings county, in 1912; at the University of St. Joseph's, Westmoreland county, in 1913; and at Havelock, Kings county, and Randall's Corner, Sunbury county, in 1914.

The general treatment is about as follows:—The trees are heavily pruned, the rough bark scraped off the trunks and main limbs, and wounds resulting from sunscald, canker, etc., are carefully cut back, disinfected and painted. A dormant spray of commercial lime sulphur (1-9) was applied to control the oyster shell scale and remove lichens and other fungous growths. Two, three, and in some cases, four, subsequent sprayings of summer strength are applied, depending upon the local conditions and the nature of the season. Generally, a medium to heavy application of well rotted barn yard manure is applied, and applications of commercial fertilizers

—nitrate of soda, sulphate of potash and basic slag—are scattered broadcast and harrowed in. Clean cultivation is practised until about June 25th when the orchard is then sown to cover-crops, generally to summer vetch, but sometimes to a mixture of mammoth red clover, summer and winter vetches.



GENERAL VIEW OF DEMONSTRATION ORCHARD AT MAUGERVILLE, N.B., SHOWING LARGE SIGN BOARD.

In taking over these orchards the department agrees to operate them for three successive years under the

following conditions:—(1) The complete season's orchard operations to be under the direct superintendence of the provincial horticulturist or appointee of his; (2) The department provides free the services and

provides free suitable spraying materials and appliances; (4) The owner of the orchard agrees to assist or provide assistance in the actual work when requested to do so, and also to provide, at his own expense, such



TREES BEFORE PRUNING IN DEMONSTRATION ORCHARD, MAUGERVILLE, N.B.

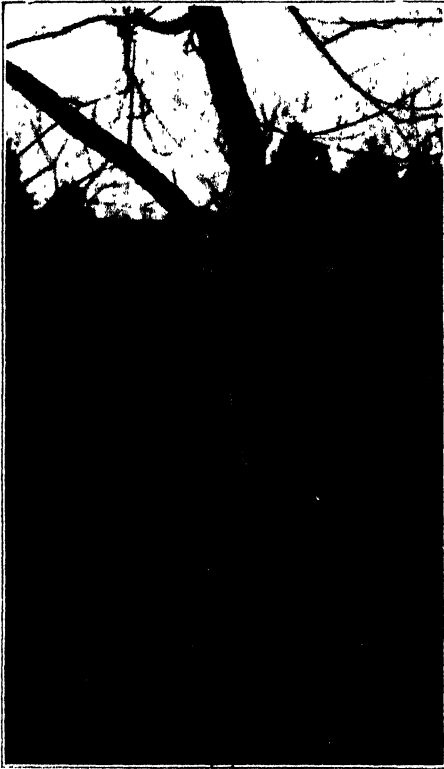
expenses involved in the actual work of pruning, spraying and otherwise properly caring for the orchard, except for such work as is performed by the owner of the orchard or his hired man; (3) The department

barnyard manure, commercial fertilizers, horse labour and fruit packages as may be needed; (5) The proceeds from the sale of apples to be the property of the owner, provided however, that the department may



TREES AFTER PRUNING IN DEMONSTRATION ORCHARD, MAUGERVILLE, N.B.

purchase a portion or all of the crop except that which the owner needs for his own use.



UNTREATED SUNSCALD AND CANKER WOUND.

These orchards were selected with special attention to their location so that they are all situated on prominent highways and are therefore quite public. A large sign, about six feet by four, is set up in each orchard calling attention of passers-by to the nature of the work being carried on. Articles concerning the establishment and care of these orchards, and their condition from time to time, are published in the local papers. A spring and fall meeting are generally arranged for each orchard and these are held while the actual work is going on so that the neighbouring farmers may see the pruning and spraying of the trees in the spring and the picking and packing of the fruit in the fall.

The operation of these orchards by the department has demonstrated to their localities the successful renovation of neglected trees and the advantages and profits resulting from the practice of proper pruning, spraying, cultivating and fertilizing. The Maugerville orchard gave a net profit per acre of \$54.33 in 1911, of \$206.55 in 1912 and \$31.75 in 1913, or an average annual net profit per acre for the three years of \$97.54. The Douglas orchard gave a net profit per acre of \$88.56 in 1911, of \$341.76 in 1912, and of \$100.52 in 1913, or an average annual net profit per acre for the three years of \$176.94. The Albert county orchard gave a net profit per acre of \$182.04 in 1911,



TREATED SUNSCALD AND CANKER WOUND.

of \$80.34 in 1912, and of \$104.66 in 1913, or an average annual net profit per acre for the three years of \$122.34.

Below is given a summary of the three years operations in the demonstration orchards at Lower Coverdale Albert county, and Douglas, York county. Full particulars concerning all of our demonstration orchards

with detailed items of expenditure and revenue will be found on pages 51-81 of the Report on Horticulture for 1913,—copy of which will be gladly sent upon application.

SUMMARY.

DEMONSTRATION ORCHARD AT DOUGLAS, YORK COUNTY.

YEAR.	Total Yield.	Yield Per Acre.	Net Profit Per Acre.	Net Profit Per Barrel.	Average Selling Price Per Barrel.	Total Cost of 1 Bbl. Apples, Grown, Packed and Marketed.
1911	147 bbls.	98 bbls.	\$ 88 56	\$ 90	\$2 43	\$1 53
1912	342 "	228 "	341 76	1 50	2 16	66
1913	86 "	57 1/3 "	100 52	1 75	2 90	1 15
The average of the three years gives the following results		127 2/3 "	176 94	1 38 1/3	2 49 2/3	1 11 1/3

DEMONSTRATION ORCHARD AT LOWER CLOVFRDALE, ALBERT COUNTY

YEAR.	Total Yield.	Yield Per Acre.	Net Profit Per Acre.	Net Profit Per Barrel.	Average Selling Price Per Barrel.	Total Cost of 1 Bbl. Apples, Grown, Packed and Marketed.
1911	697 bbls.	230.3 bbls.	\$182 04	\$ 78	\$1 82	\$1 01
1912	280 "	93 1/3 "	80 34	86	2 51	1 65
1913	197 "	65.6 "	104 66	1 59	3 14	1 51
The average of the three years gives the following results		130.4 "	122 34	1 07 1/2	2 49	1 41

QUEBEC.

BY J. H. LAVOIE, ASSOCIATE-CHIEF OF THE FRUIT DIVISION.

SYSTEM.

THE present system was inaugurated in 1898. Recommended at first by the members of the Pomological Society, it was eventually adopted by the Department of Agriculture and modified from time to time in accordance with the requirements of the various sections of the province.

When this system was decided upon, most of the orchards were composed largely of old trees, generally neglected and seldom pruned or sprayed. Consequently, the yield was poor and the fruit of inferior quality.

This situation imposed a double task upon the department. In the first place, it had to be demonstrated to the farmers of the eastern part of Quebec that fruit growing could be

made profitable by the use of acclimatized varieties; it had also to be demonstrated to those of the western part of the province that the production could be largely increased and improved by the use of more scientific methods of management. In both cases it was necessary to disseminate information by instruction and demonstration, which the department has endeavoured to do by the most efficient means.

INSTRUCTION.

Information is being given in three different ways:—

1. By wide distribution of publications such as bulletins, circulars and reports.
2. By periodical lectures given at the short courses, organized in the

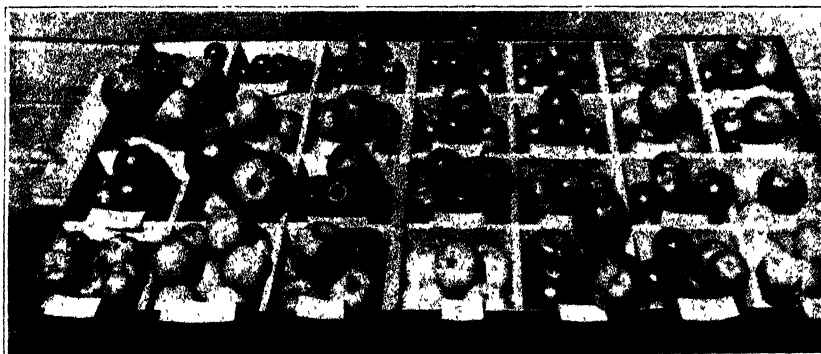
schools of agriculture, or in the chief fruit sections of the province.

3. By series of articles or calendars of monthly operations published in the *Journal of Agriculture* and reproduced by a large number of daily papers.

PRACTICAL DEMONSTRATIONS.

Owing to the fact that there are districts where no fruit growing has been attempted and where it is desired to establish this industry and other districts where the industry already exists but where it must be improved from a purely commercial point of view, the methods

tions are in charge of farmers who desire to grow fruit and who pledge themselves, by contract with the department, for a period of five years, at an annual rental of \$25, to give their whole attention, free of charge, to the scientific management of the orchard established on their land, in order to collect the greatest possible amount of useful data for the fruit growers of their district. At the end of the five-year period, the department keeps 10 per cent of trees and shrubs originating from the scions that have succeeded. It also reserves the right to purchase the fruit of the said orchards in whole or in part for experimental



COLLECTION OF 28 VARIETIES OF APPLES, TAKEN FROM THE FRUIT STATIONS OF STE. FAMILLE, AND ILE-D'ORLEANS, QUE.

must necessarily vary, in accordance with the requirements. The following have been established by the department.

(1) *Experimental Fields*, in charge of good farmers, in districts where the climate is very severe and where several attempts to establish an orchard have already failed. These farmers are supplied with the hardest varieties, over which a close watch is kept. There are now four of these experimental fields.

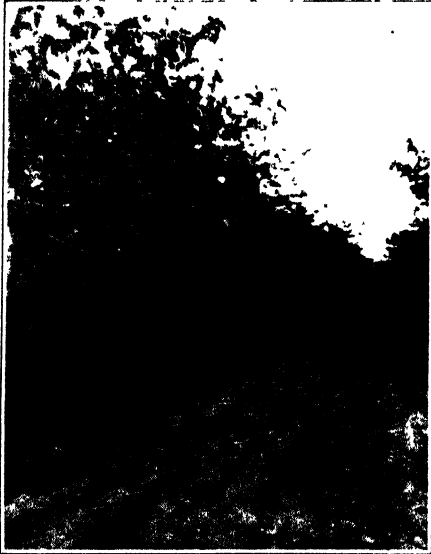
(2) *Fruit Stations*, the object of which is to teach the farmers the proper methods for the establishment, the cultivation and the management of an orchard. These sta-

purposes, exhibitions, packing demonstrations at the market price.

There are now 38 of these stations, situated in different parts of the province and they cover a total area of 85 acres. They are equipped with pruning instruments, spraying machines and spraying solutions. There were sent to these stations, this year, 550 lb. of lead arsenate, 185 gallons of lime-sulphur wash and 15 lb. of sulphate of nicotine (blackleaf 40). Some of the stations are drained and all are protected from trespassers by special fences.

(3) *Demonstration Orchards* for teaching scientific methods of cultivation and showing the care with

which the operations should be performed in order to market only first class fruit. These orchards are supposed to serve as models for the fruit growers of each locality. There are now seven of them covering a total area of $33\frac{1}{4}$ acres.



ORCHARD OF MCCOOL BROS., ST. JOSEPH
DU LAC, QUE.

The annual expenditure made by the department in each of these orchards must not exceed the sum of \$500, including the annual rental of \$25 per acre, cost of building fences, cost of fertilizers, spraying solutions or chemicals necessary for the making of the same, leguminous seeds, 800 lb. of chemical fertilizers, 10 tons of farmyard manure per acre, and all necessary implements for the culture and the management of the orchard.

On the other hand, the owner is bound by contract to do all the work in accordance with a special program prepared by the department and which may be summarized as follows: he must, at his own expense, spread the manure, cultivate the soil, plow under leguminous crop, prune the trees, spray at least four times during the season, thin the

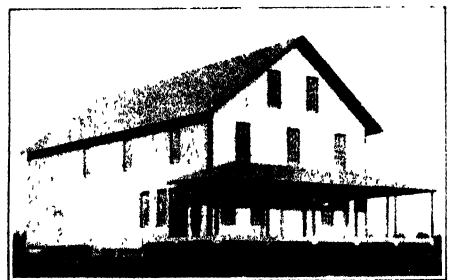
fruit, pick the fruit by hand and pack it—the whole in accordance with the instructions of the superintendent of demonstration orchards.

The owner is entitled to the whole crop of fruit, but the department reserves the right to purchase this crop in whole or in part at the market price. Two of these demonstration orchards are now using grading machines; one of them has a cold storage warehouse and all are equipped with automatic pumps.

RESULTS.

The results so far obtained in these various establishments have been so satisfactory that fruit growing has made progress in the whole province. Not only are the farmers now establishing orchards or renovating those that they have already, but everywhere they are organizing new horticultural societies or co-operative associations in order to improve, increase and market the produce.

In all the horticultural exhibitions held this year a marked improvement could be noticed by comparison with the previous years in the appearance, the grading and the pack-



COLD STORAGE WAREHOUSE AT ROUGE-
MONT, COUNTY OF ROUVILLE,
QUE.

ing of the fruit. In order to facilitate the destruction of insect pests, the Minister offered last year, to the agricultural societies of the provinces the advantage of securing, at exceptionally favourable terms, the spraying material they might need.

Up to the present time the department has paid a part of the cost of the 73 spraying machines purchased by these societies.

Recently a list of questions was sent to these societies as to the quantity and cost of the various kinds of spraying material purchased during the year. Not all the societies have reported as yet but the quantities for those that have reported are as follows: lead arsenate, 12,000 lb. purchased at the average price of

14½ cts. a pound; lime sulphur, 6,793 gallons at 15 cents a gallon; Paris green, 205 lb. at 15½ cents; copper sulphate, 1,188 lb. at ½ cent; spraying pumps, 118 at the average cost of \$14.36 each.

In view of these results and of the exceptional advantages that the province offers for the production of fruit, there are reasons to believe that the province of Quebec will soon become one of the most important fruit growing centres in Canada.

MACDONALD COLLEGE.

BY T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE.

THERE have been a number of demonstration orchards established in the better known fruit sections of this province, which have been under the management of the Department of Agriculture and the Pomological and Fruit Growing Society, and these have been very successful in encouraging the taking of greater interest in the many old orchards of these respective sections.

In recent years there has been a very keen demand for information and instruction in apple growing in some sections where apple growing has not been put on a firm basis. Realizing this the Horticulture Department of Macdonald College has been holding orchard demonstrations in pruning, spraying, grafting, management, etc., of orchards in various districts. These meetings have been held in orchards at the following places:—Ayer's Cliff, North Hatley, Smith's Mills, Rockburn and Shawville, and at other points information has been given from time to time as opportunity occurred. In addition

it has been deemed wise to establish a number of illustration orchards at central points in sections outside of the better known apple districts. At Lennoxville and at Shawville small apple orchards of 50 trees of McIntosh and Fameuse have been planted, and it is the intention to add more varieties to these in the near future and also to establish other plantings of a similar nature elsewhere. Only those varieties that are perfectly hardy and most likely to be satisfactory are being planted. The orchards are intended to be a gathering place for meetings in the future as well as a demonstration of just what may be accomplished in apple growing in these sections.

The two orchards already planted are under the management of the Macdonald College demonstrators located at Shawville and Lennoxville, and both of these orchards have done exceptionally well during the past year. Plans are now being made for the planting of several more orchards in the spring.

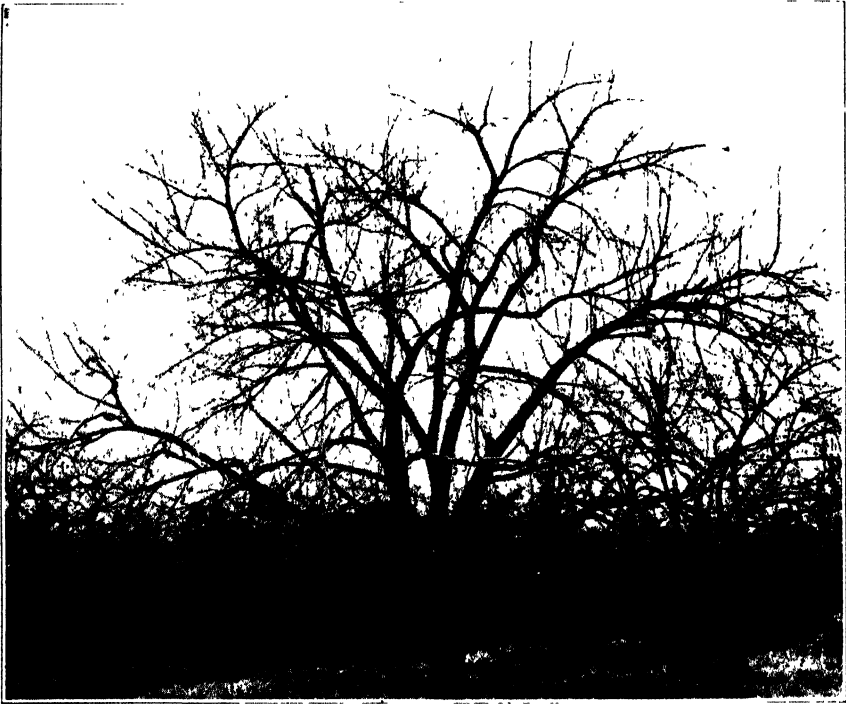
ONTARIO.

BY P. W. HODGETTS, B.S.A., DIRECTOR FRUIT BRANCH.

DURING the year 1914 twenty-three demonstration orchards in various parts of the province were conducted by the district representatives of the Ontario Department of Agriculture, under the supervision of the Fruit Branch. These orchards were thoroughly pruned, sprayed and cultivated. The pruning was in most cases done by men specially sent out by the

Hastings, Kent, Lambton, Leeds and Grenville, Middlesex, Ontario, Peel, Prince Edward, Simcoe and Welland. In addition to the above demonstration orchards, many pruning demonstrations were held throughout the fruit districts of the province.

For the coming season it is expected that at least as many orchards as for the past year, will be taken over by the Department of



A SPY TREE IN AN ONTARIO ORCHARD USED IN A PRUNING DEMONSTRATION.

This shows the tree before pruning.

Fruit Branch. The spraying was left almost entirely in the hands of the representative, and the cultivation was done by the owner of the orchards under the direction of the representative.

Demonstration orchards were located in the counties of Brant, Bruce, Dundas, Elgin, Essex, Glengarry,

Agriculture for demonstration purposes. Special experiments in pruning, one of which is to determine what months of the year bearing apple trees can be safely pruned, are also to be conducted and continued. The above experiment in particular has been carried on since September, 1914.

In the demonstration orchard work as usually carried on in the past, the expense of pruning, spraying materials and part of the labour for spraying has been supplied by the department, either directly from the Fruit Branch or by the district representative. The owner of the orchard was required to do the plowing and cultivating, manuring and teaming as required, and to assist with the spraying, etc. The har-

number of years to insure a fairly accurate result. Various spray materials, clean cultivation with cover crops v.s. sod culture, and different fertilizers will be thoroughly tested out on a commercial scale. The harvesting and marketing of the fruit will also be done by the Fruit Branch.

The organization, advertising, etc., of public meetings in conjunction with the work being carried on in



A SPY TREE IN AN ONTARIO ORCHARD USED IN A PRUNING DEMONSTRATION.

This shows the tree after pruning.

vesting and marketing of the crop was entirely in the hands of the owner.

During the last year, however, a new phase of orchard demonstration was undertaken by the Fruit Branch in which three orchards of upwards of four acres each were leased outright for a term of years. In these orchards, demonstrations and experiments in pruning, spraying, cultivation, fertilization, marketing, etc., are to be carried on for a sufficient

the demonstration orchards, is left entirely in the hands of the district representative, the speakers being furnished by the Fruit Branch.

Below is tabulated the financial statement for 1914 of a government demonstration orchard in Dundas County. The orchard in question consisted of about $1\frac{1}{4}$ acres of McIntosh variety. These figures serve to show conclusively how old neglected orchards may be made very profitable indeed.

ORCHARD OF EARNEST FARLINGER, MORRISBURG.

EXPENDITURE.

<i>Cultivation:</i>	
Disking, 1 day man and team...	\$3.50
Cover crop, 1½ bu. grain at 50c.	.75
Sowing cover crop, ¼ day at \$3.50...	.85
Manure, 12 loads at \$2.00	24.00
<i>Pruning:</i>	
20 days at \$2.50 per day...	50.00
1½ days scraping at \$2.00 per day...	3.00
1 day painting cuts on trees, etc.	2.50
<i>Spraying:</i>	
4 days at \$2.00 per day for nozzle man	8.00
4 days at 3.50 per day for man and team	14.00
<i>Thinning:</i>	
5 days at \$2.50 per day	12.50
<i>Picking:</i>	
2 men, 5 days at \$2.00 per day	20.00
<i>Packing and Grading:</i>	
2 men 8 days at \$2.50 per day...	40.00
<i>Cost of Spray Material, four applications:</i>	
84 gals. lime sulphur at 18c.	15.12
81 lb. arsenate of lead at \$9.00 per cwt.	7.29
5 lb. Black Leaf 40 at \$1.25	6.25
<i>Packages:</i>	
311 apple boxes at 15½c	48.20
Wrapping paper, etc	17.00
19 bbls. at 45c	8.55
50 lb. nails at 3c. per lb	1.50
	<hr/>
	\$283.01

RECEIPTS.

3 bbls. No. 1 locally at \$3.00	\$ 9.00
54 boxes No. 1 Ottawa at \$2.00	108.00
94 boxes No. 1 Toronto at \$1.25	117.50
145 boxes No. 1 Montreal at \$1.40	203.00
20 boxes No. 2 Montreal at \$1.15	23.00
19 bbls. No. 2 locally at \$2.50...	47.50
81 bus. Windfalls at 50c.	40.50
33 bus. Windfalls at 25c	8.25
	<hr/>
	\$556.75
Expenditure.....	283.01
	<hr/>
Net profit.	273.74

In the foregoing figures two or three items should be specially noted. The value of the manure to the land will be distributed over a number of years. Similarly the pruning charges are high as the orchard had been neglected for a number of years.

Prices also for McIntosh apples were not so good as usual during 1914. The number of culls too, 114 boxes, is very high, due to a windstorm just before the fruit was ready to pick.

Concerning two demonstration orchards in Middlesex County, Mr. I. B. Whale, the District Representative there, writes as follows:--

"In reply to your letter of January 27th, regarding results in our demonstration orchards, our most marked results were in Mr. Caverhill's orchard, with twenty-five trees of McIntosh Reds. These trees were something over twenty years old, and according to Mr. Caverhill, they had not produced fruit that was marketable, the scab ruining the fruit and destroying the leaves many years. A year ago, I do not think I saw as scabby looking fruit or as small leaves. Mr. Caverhill intended grafting these last spring to other varieties, but after some persuasion he allowed Mr. Kydd of the Fruit Branch, and myself to use them for demonstration work. We gave these trees four sprayings of lime sulphur, using 45 gallons of lime sulphur in all and 55 pounds of arsenate of lead. Figuring the cost of man labour at fifteen cents per hour and horse labour at ten cents per hour, the total cost was \$11.50, besides the pruning. While the scab was bad in other trees of the same variety as well as other varieties, our twenty-five trees produced 38 barrels of apples, 33 of which were No. 1's, the remainder No. 2's, which shows the results which have been obtained in one year, due to pruning and spraying. I might say, that the orchard was cultivated during the summer. It was from no marketable fruit in previous years to about 87 percent No. 1's with the treatment. The twenty-five trees in the old orchard, which were pruned and sprayed were free from fungous diseases and insects of all kinds.

"With Mr. Sadler's orchard of 90 trees, set out 44 years ago, we have his statement that up to two years ago, he had never marketed over \$100 worth of fruit in one year, but with the first year's pruning and spraying, the orchard gave \$200 returns. This year with the pruning and spraying, the orchard has returned over \$400 worth of fruit, sold on an open market when prices were dull. Mr. Sadler now counts his orchard the best paying part of his farm, and firmly believes that the returns can be increased one half as much again by fertilizing the orchard and by continued care."

MANITOBA.

BY W. C. MCKILLICAN, B.S.A., SUPERINTENDENT BRANDON EXPERIMENTAL FARM.

SOME of the hardiest varieties of standard apples are being tested at the Brandon Experimental Farm, but the situation does not seem favourable and the results up to the present are not very encouraging. Good results have been obtained with cross-bred varieties originated by the late Dr. Wm. Saunders who was for many

the hope of developing hardy varieties of standard size and quality. Thousands of seedlings of the hardiest standard apples are being grown in nursery rows. At present about 11,000 of these seedlings are under observation at Brandon. It is hoped that greater variation and consequently greater opportunities for selection will be gained by the use



THE ANISETTE APPLE GROWN IN ORCHARD OF A. P. STEVENSON, DUNSTAN, MANITOBA.

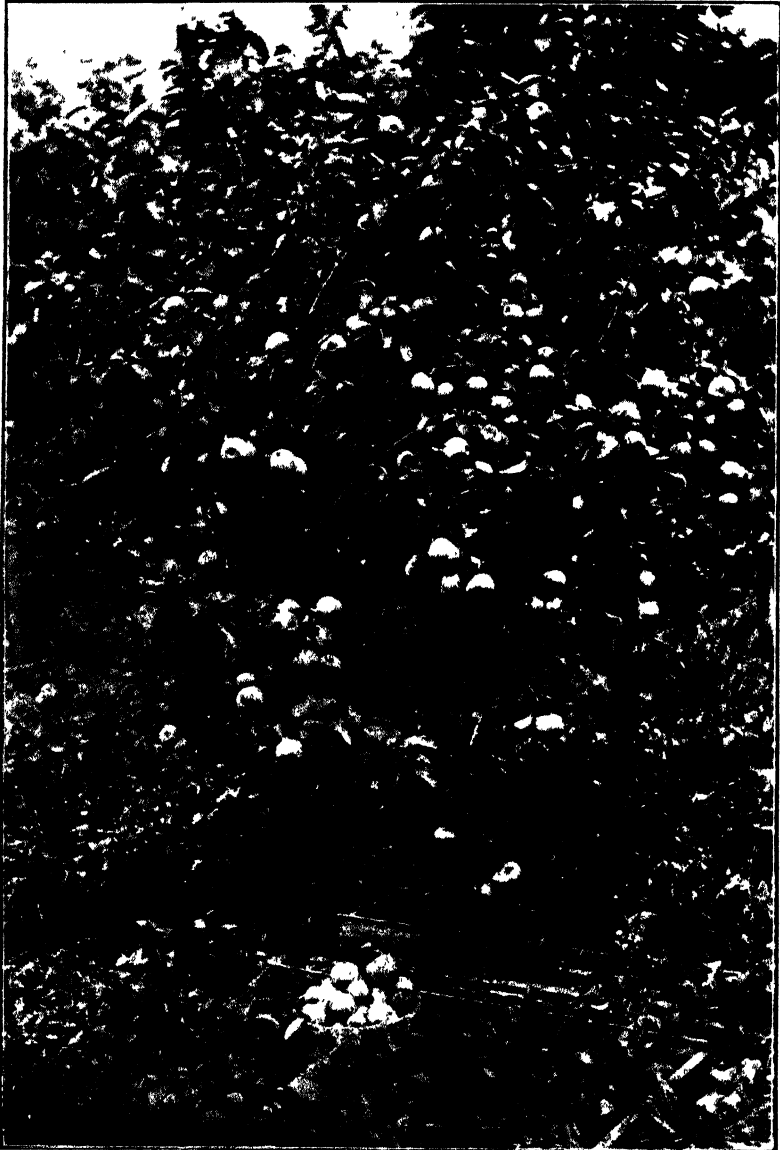
years Director of the Experimental Farms. These were produced by crossing standard varieties with (*Pyrus baccata*), a native of Siberia, very hardy but producing small astringent fruit. Some of the hybrids originating from these crosses have proved to be of great value for prairie conditions. Many trees of this type fruit quite abundantly at Brandon each year. The fruit is about the size of an ordinary crab apple and makes delicious preserves and jellies.

A new line of experimental work has been taken up in recent years in

of large numbers. These seedlings will first be rigorously selected for hardiness, then the most hardy will be brought to the fruitage stage, while the nursery rows will be filled again with fresh thousands of seedlings. It is hoped in this way that out of the many thousands of seedlings with the great variations that seedlings show, that a variety may be found that will be hardy under the most rigorous conditions, and yet bear fruit of good size and quality.

PLUMS

The different varieties of plums



WEALTHY APPLE TREE IN ORCHARD OF A. P. STEVENSON, DUNSTAN,
MANITOBA.

that are recommended for western conditions such as Cheney, Aitken and the numerous varieties originated by Professor Hansen of South Dakota, are being tried at Brandon. These all succeed quite well, but none are quite so satisfactory on the whole as some of the best strains of Manitoba Native plum. One of the best and earliest of the latter has been called the Major plum. Further work is being done in developing and isolating improved strains of the native plum.

BUSH FRUITS.

Currants, gooseberries and raspberries all succeed very well. Experiments are being conducted in testing out the different varieties of bush fruits. Different methods of mulching and winter protection are also being tried.

STRAWBERRIES.

Strawberries have been grown with great success for many years. Experiments with varieties and winter protection are being conducted.

ALBERTA.

BY GEORGE HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE.

ALBERTA has no orchards or vineyards, or fruit plantations—nothing but possibilities—and they are so full of potentialities that no one can foretell the great things that may come out of these possibilities.

The wild gooseberry, currant and raspberry grow profusely wherever there is shelter, while the wild strawberry is found practically everywhere. In addition to these universally known fruits there is the blueberry, high and low bush cranberry and the saskatoon. The latter is peculiar to the prairies and responds to cultivation readily but the fruit is flat tasting and not held in very high esteem. Where the wild fruit grows it is generally conceded that the tame or cultivated variety will succeed. It may take a little time and numerous experiments to find out just how to attain success, but sooner or later a way will be found.

Small plots of cultivated strawberries are now to be found from one end of the province to the other; while here and there a more enterprising pioneer has quite large sized plots and is placing strawberries on the market.

The black, red and white currants and raspberries are to be found in

hundreds of gardens but have not been grown as yet for sale in any quantity.

So uniformly successful has the effort been to grow all of these fruits that one can safely say now that there is no excuse for any farmer not having all the strawberries, raspberries, currants and gooseberries needed in the farm home. Wind-breaks are necessary and the plants have to be held back in the spring by winter mulching to guard against late spring frosts.

Practically all the varieties of the small fruits that have proven most desirable in Eastern Canada have given best results here also.

Of the larger fruits a less hopeful report must be made. It is said where the wild plum, the pin-cherry and the choke-cherry are to be found the apple, pear and plum will grow. The two varieties of cherry are to be found growing in practically every ravine or coulee where there is a good shelter of trees. This would indicate that where a shelter built of trees is grown it may be possible to grow hardy apples. That there are possibilities in this direction and that these possibilities deserve most careful study is indicated by the fact that there are apple trees grow-

ing and bearing in the province. They are found from the extreme south, as at Medicine Hat and Lethbridge, to north of Edmonton. These trees were purchased from various nurseries and have done well without special protection. Crab-apple trees have been grown at many points in the province and at points hundreds of miles north of Edmonton, and there is thus a possibility that the area capable of growing apples may prove much more extensive than the most sanguine now expects. This is borne out by the fact that young apple trees are promising well at the Dominion Experimental Station at Fort Vermilion on the Peace River in the northern part of the province. The work being done at

the Lethbridge and Lacombe Experimental Stations of the Dominion Government along the line of fruit growing is most valuable as well as highly encouraging. A hardy root stock to graft on seems to be the first essential for which to work.

The provincial government established some nine small experimental fruit stations in 1907. Yearling trees of hardy varieties were planted and at some points met with promising results; while at others the trees were killed every winter. On the establishment of the Demonstration Farms these plots were discontinued, the intention being to make this one of the lines of investigation and demonstration.

BRITISH COLUMBIA.

BY H. THORNER, ASSISTANT PROVINCIAL HORTICULTURIST.

OWING to the many and varied conditions met with in British Columbia by the fruit grower, a large amount of demonstrational and experimental work has been found necessary. This work has served a double purpose; first, it advances the industry at a more rapid pace than when left to the observations of the fruit grower, and, second, it prevents many costly mistakes from being made by the fruit growers in their attempts to grow orchards.

While the few pioneer orchards located at various points in the province have been of some value in determining the proper varieties for those districts wherein they are located, they have often served to mislead growers as to the exact value of some of the most important varieties. To-day, many mistakes are being discovered regarding varieties and many of them can be attributed to observations made on the results in these orchards.

Previous to 1900 little authentic information regarding the best vari-

eties for each district had been compiled. There was also a great diversity of opinion regarding the selection of nursery stock; the proper distances for planting; proper methods of pruning; when and how to spray; how to cultivate; and last but not least, practically nothing was known regarding the cost of these various operations. During the past fifteen years, and especially since 1909, much definite information has been collected on these subjects. The origin of the greater portion of this information has been from demonstrations and experiments in old orchards and from the results of the orchards under the supervision of the Government which were called Demonstration Orchards.

These orchards were started in 1911. At the present time there are sixteen and they are located at the following points:—Cowichan, Nanaimo, Hammond, Aldergrove, Lower Nicola, Walhachin, Shuswap, Salmon Arm, Willow Point, Rossland, Birchbrook, Waldo, Windermere, New Denver, Wardner and

Golden. There is also a small-fruit plantation at Chilliwack which is under management similar to the orchards.

The area of each of these orchards is about 5 acres and it is set aside for the use of the Government for 5 years. The owner agrees to clear and fence, to provide and maintain the irrigation system; to bear the cost of cultivation; furnish all necessary implements; keep records of the cost of each operation, and if requested, make reports on the progress of the orchard from time to time.

The Government provides the trees, plants and prunes them, and gives instructions, through the district horticulturist, regarding the care of the orchard; and pays any outside expenses in excess of those necessary for the actual management of the orchard.

At the expiration of the agreement the orchard becomes the property of the owner.

These orchards contain the most suitable varieties for the respective districts. As a rule, fillers are used. Some of these orchards are intercropped with small fruits, potatoes or root crops, while others are cultivated during the summer season and seeded to a cover crop in the fall to aid in ripening the trees and to improve the soil. The pruning is done by the local horticulturist in order to demonstrate different systems and to ensure uniformity.

At various times during the year these orchards are used for demonstration work in spraying, pruning, etc., and the orchard is open to the inspection of the public at all times. The public meetings are arranged through the Farmers' Institute or by the horticulturist in charge. The attendance at these meetings is usually good and much interest is taken by the neighbouring orchardists as well as by the owners.

Other forms of orchard demonstration work are being carried on also. Among these, packing, pruning,

spraying, thinning and fertilizing demonstrations and tests are the most important.

The Apple Packing Schools were inaugurated in 1911, when thirteen were held. This number increased to 30 in 1912 and to 41 in 1913. In 1914 the number of classes decreased to 37, and in 1915 only 25 have been requested to date. This decrease does not indicate a decline in the interest taken in packing but shows that a sufficient number of packers has been produced to handle the bulk of the crop. In 1914 it was estimated that 75 per cent of the crop was packed by pupils of the Government packing schools. The packing schools consist of twelve 3-hour lessons extending over 6 days. The minimum number of pupils is 12 and the maximum number allowed is 16 for each school. A fee of \$2.00 is charged for admission.

These schools have been very successful and have been adopted in parts of Australia and Tasmania as well as in Nova Scotia and Ontario.

Aside from the numerous pruning demonstrations which are held under the direction of the Farmers' Institute in the Demonstration Orchards, and in the orchards of fruit growers at many points in the province, a distinct line of pruning instruction was installed in the spring of 1914. This resulted from the fact that sufficient information regarding pruning could not be given in a single demonstration. These 'Pruning Schools' as they are called, were patterned after the Apple Packing Schools, and are conducted by the assistant horticulturists. Briefly, they consist of ten 3-hour lessons extending over 5 days. A minimum of 8, and a maximum of 12 pupils is allowed for each school. The admission fee is \$1.00 for each student. Last year, 26 pruning schools were held, and this year at the present writing over 55 have been applied for and more applications are coming in every week.

Spraying demonstrations have also

been given at various places in the province. These have been divided into two general classes. First, demonstrations have been given under the auspices of the Farmers' Institute, to show how to mix and apply the sprays; and the value of the different nozzles with various sprays. Second, experiments have been made to test the value of the different sprays. The three sprays mainly under consideration were Lime Sulphur, Soluble Sulphur and Bordeaux. These were used last year for Apple and Pear Scab in orchards at Salmon Arm and Harrop. As high as 97 per cent clean fruit was secured by the proper use of Lime Sulphur. Similar results were secured by Bordeaux but a considerable amount of russetting was noticed which was not present when Lime Sulphur was used.

The Soluble Sulphur gave fair results, but until further tests are made, it cannot be recommended for general use. Other spraying experiments have also been made by the Inspection Branch of the Department of Agriculture, with good results.

One experiment was made in thinning apples. The increase in favour of thinning was between 130 to 150 per cent over the unthinned trees. More experiments in thinning will be conducted in the future and if they give such promising returns as these have in the past it will become a much more general practice.

Fertilizer experiments have also been started but from the nature of these no results will be published for some time yet.

Professor W. R. Reek, B.S.A., has resigned the position of Associate Professor of Animal Husbandry at the Ontario Agricultural College to accept a position on the staff of the Department of Agriculture of Prince Edward Island. Professor Reek will have a general oversight of the extension work of the Island Department of Agriculture and will give special attention to the work being done under the provisions of (THE AGRICULTURAL INSTRUCTION ACT.)

Mr. A. L. McCredie has resigned from the editorship of the "Canadian Countryman" to engage in the growing of a large acreage of flax and the preparation of the fibre, according to a new method, on behalf of one of the largest flax fibre mills of the United Kingdom.

PRINCE EDWARD ISLAND.

HOUSEHOLD SCIENCE SHORT COURSES.

BY MRS. A. E. DUNBRACK, SUPERVISOR OF WOMEN'S INSTITUTE.

SINCE the 4th of January 100 ladies have been admitted to the classes in Home Economics which have been conducted by the Women's Institute Division of the Department of Agriculture for Prince Edward Island. These classes have been held in the Prince of Wales College and have included in their work the following subjects: - Cooking; household administration; table setting and serving; laundry; personal hygiene; sanitation; millinery; home nursing; planning of kitchen garden; planning of school gardens; landscape gardening; dietetics, tuberculosis; arrangement of an efficient kitchen and farm home conveniences and household furnishings.

The above subjects include those with which a woman as a homemaker should be familiar. Economy in the management of household affairs is the keynote of the whole course. The student learns how to save materials, time and labour. By means of lectures she is taught why certain things and certain methods are better than others. Then by actually doing the work, she applies the knowledge gained in the lecture room to practical cookery, sewing, millinery, home nursing, laundry, table setting, etc. It is a practical course which trains the hand as well as the intellect. It offers the kind of knowledge which a woman can apply in her everyday housework and her everyday relations to the farm.

In the lectures on hygiene and sanitation the subject is dealt with in regard to the effect of the air we breathe, the water we drink and the

house in which we live, upon our physical health. This course aims to bring out the close relation which exists between disease and such simple factors in our everyday life as fresh air, proper care of the body, furnishing of the home so it does not harbour dust, etc. This is an age of preventive medicine. Let us learn how to keep well. The course in millinery aims to teach the women how to make, trim and retrim their own hats. It includes the designing and drafting of patterns for hats; construction of frames of buckram and wire; covering and refinishing with velvets, nets and making and placing of trimming, as well as the instruction in ribbon and silk flower-making. All of these are applied to the making of hats from original designs. The laundry work includes the application of science to practical laundering, such as may be worked out by the study of blueings, starches and soaps, with the effects of each on the different fabrics. A comparative study of the different brands of the above mentioned necessities is made and their relative values for the different purposes estimated. Laundry equipment is investigated with the idea of providing that which will enable the work to be done with the least expenditure of labour and money. The practical work in the home nursing course includes the making of beds, bandaging and poultice-making. In considering the first care of the patient, the topics discussed are: -choice and preparation of the sick-room, care of the patient, bathing of patient, making of patients' bed and the importance of

carrying out the doctor's orders implicitly. Next, as so many diseases are transmissible, the prevention of further contagion is considered, isolation of patient, disinfection of anything removed from the room, and the care of the room after recovery of the patient. In Dr. Garrison's lectures on Tuberculosis special attention is given to the care of the patient during the disease in which the nursing is such an important factor.

A course in Dietetics and Invalid Cookery is also given as well as a practical course of several lessons in plain cookery. The subject of home furnishings deals with comfort, simplicity and beauty and the essentials of a well furnished home. It is not a question of money but of knowledge and an understanding of line, proportion and colour, the

laws that govern all ornamentation. In the arrangement of the efficient kitchen the lecturer brings out the importance of having the furnishings and utensils arranged so as to save time and steps. Plans are drawn and discussed. Lectures on farm home conveniences, school gardening and landscape gardening are dealt with by officials of the Departments of Agriculture, while the classes in the various subjects of Home Economics are being conducted by Mrs. A. E. Dunbrack, Supervisor of Women's Institutes, and Misses Helena C. Macdonald, Hazel L. Sterns, Alberta M. McFarlane, Assistant Supervisors.

It has been arranged to continue these classes throughout the month of March, the first class in this month commencing March 8th and closing March 20th.

NOVA SCOTIA.

REPORT OF STANDING FIELD CROPS COMPETITION FOR 1914.

BY F. L. FULLER, SUPERINTENDENT OF AGRICULTURAL SOCIETIES.

THE results of the Field Crops Competition in Nova Scotia for the past season were highly satisfactory.

In addition to a vast improvement in quality, there was a large increase in entries in all classes. The increase in oats and potatoes over 1913 amounted to 17 per cent and in wheat 14 per cent.

For wheat and oats, there was a competition in each county making five or more entries. For potatoes, the province was divided into four districts. The minimum number of prizes offered was four, where there were only five entries, and the maximum was twenty, where there were thirty or more entries. Prizes were paid according to the number of points scored, the rate being thirty cents per point for all points above sixty-five, our idea being that no

field, scoring below that number of points, was worthy of a prize.

The total amount of money paid in prizes was \$1,382.75, divided among the competitions as follows:—

Oats	\$796 93
Wheat	360 09
Potatoes	225 73

The highest score in the oats competition was 95.3, and the lowest 62.5. Eighteen per cent of the scores made were 90, or over, while only 12 per cent were below 70. In the wheat competition, the highest score was 94, and the lowest 65. Only 2½ per cent of the scores were below 70, while 25½ per cent were 90 or over. In the potato competition, one field scored as high as 97, while the lowest score was 72. Twenty-eight of the fields scored above 90, while only 14 per cent scored below 80.

In the potato competition, the district in which Lunenburg county is included, that county succeeded in capturing the first four prizes. The banner field scored 97 points, and the judge stated there was very little reason for not allowing it a possible score. All fields entered in the competition in this county were sprayed with Bordeaux mixture at least twice, some three, and the first prize field, four times.

In the report of the Lunenburg County Farmers' Association, the president, in summing up crop conditions in that county, pointed with pride to the fact that their county

had won the first four places in the potato competition for their district, and went on to say that the first prize field, containing just two acres, had yielded 970 bushels, and that the other prize winning fields had yielded more than 400 bushels per acre. The president, to a large degree, attributed the improved crops to encouragement given through "Field Crops Competitions." The benefits of competitions are, by no means, confined to the competitors. They have been the means of establishing the value of good seed, and have made it possible for farmers to get seed which can be relied upon.

BOX PACKING DEMONSTRATIONS.

BY P. J. SHAW, B.A., PROVINCIAL HORTICULTURIST.

THROUGH the co-operation of the Dominion Fruit Commissioner's Branch and the provincial Department of Agriculture, four demonstrations in box packing of apples were held in Nova Scotia during the month of January. Mr. A. H. Flack, Dominion Fruit Inspector for the Prairie Provinces, gave instruction in box packing to the short course and regular course students at Truro from January 7 to 12.

Demonstrations were then held in the apple packing warehouses at Berwick and Port Williams. A box packing school was held at Kentville between January 25 and 30, at which thirty-two students were enrolled. Mr. Flack showed how that most of the apples could be packed by either the 2-2 pack or the 2-3 pack. By the use of the following four rules and a table of packs Mr. Flack showed how any one could learn to pack apples in boxes without any difficulty.

RULES FOR BOX PACKING.

Method by which packers will determine packs to be used:—Packers should follow very carefully the following guide and under no circumstances whatever should they vary from it.

1st. If four apples of the same size fit side by side across the box, or four fit loosely and the fifth will not go in, the pack is 2-3. Five layers to fill the box.

2nd. If three apples fit loosely across the box, side by side, and the fourth will not go in, the pack is 2-2. Four layers to fill the box.

3rd. If three apples fit tightly across the box side by side the pack is straight 3. Three layers to fill the box.

4th. If two apples, side by side, fit loosely across the box, and the third will not go in, the pack is 2-1. Three layers to fill the box.

TABLE OF PACKS.

2-1 DIAGONAL PACK:—

2-1, 4-4	36 apples to the box.	Pack on side.
2-1, 4-6	41 apples to the box.	Pack on side.
2-1, 5-5	45 apples to the box.	Pack on side.

STRAIGHT 3 PACK:—

3 wide, 5 long	45 apples to the box.	Pack on side.
3 wide, 6 long	54 apples to the box.	Pack on side.

2-2 DIAGONAL PACK:—

2-2, 3-4	56 apples to the box.	Pack on end.
2-2, 4-4	64 apples to the box.	Pack on end.
2-2, 4-5	72 apples to the box.	Pack on end.
2-2, 5-5	80 apples to the box.	Pack on end.
2-2, 5-6	88 apples to the box.	Pack on end.
2-2, 6-6	96 apples to the box.	Pack on end (side usually)
2-2, 6-7	104 apples to the box.	Pack on end.
2-2, 7-7	112 apples to the box.	Pack on end.
2-2, 7-8	120 apples to the box.	Pack on end.
2-2, 8-8	128 apples to the box.	Pack on end.

2-3 DIAGONAL PACK:—

2-3, 4-5	113 apples to the box.	Pack on end.
2-3, 5-5	125 apples to the box.	Pack on end.
2-3, 5-6	138 apples to the box.	Pack on end.
2-3, 6-6	150 apples to the box.	Pack on end.
2-3, 6-7	163 apples to the box.	Pack on end.
2-3, 7-7	175 apples to the box.	Pack on end (usually).
2-3, 7-8	188 apples to the box.	Pack on side.
2-3, 8-8	200 apples to the box.	Pack on side.
2-3, 8-9	213 apples to the box.	Pack on side.
2-3, 9-9	225 apples to the box.	Pack on side.

The 128 pack is very seldom used, except possibly for flat varieties.

The 113 and 125 packs have taken the place of the old square pack.

QUEBEC.

SHORT COURSES IN AGRICULTURE.

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE.

THE short courses in agriculture for farmers at the school of agriculture, Ste-Anne de la Pocatière have just closed. Over two hundred persons were present at the lectures. The attention never lagged, showing the interest the people take in the work, the fine points were noted and questions were asked in order to elucidate some subjects or to secure information for special conditions.

The attendance at these short courses is increasing every year, showing that this method of teaching is keenly appreciated and that the farmers are making good use of it.

SUBJECTS TAUGHT.

The following subjects were taught

Bookkeeping: Necessity of bookkeeping at home and on the farm. Method of book-keeping.

Dairying: Study of dairying, its importance in all countries. The important part which it is called on to play in the province of Quebec.

Milk: Care of milk. Bacteria in milk.

Milking: Precautions to be taken before and after milking.

Feeding: Of bulls, cows, heifers, calves. Maintenance and production rations. Meals at regular hours so as to avoid any sudden change in feeding. Importance of green or succulent food.

Selection of a Breed: Pure breeds or grades. Selection. Study of the various breeds. History. Characters. Importance of the bull, of the dam, of the ancestors. Marks by which a good dairy cow may be recognized.

Bovine Tuberculosis: Clinical symptoms, propagation, tuberculin test.

Testing Dairy Cows: Its official organization. Its importance. Significance of the results.

Farm Manure: Its value and use.

Chemical Fertilizers: Their value, mode of purchase and method of application.

Rotations: Their importance and various systems of rotations.

Corn and Root Plants: Value of corn. Manuring. Preparation of the soil. Date of seeding. Varieties. Cultivation. Ensilage.

Roots: Selection and preparation of the soil. Manuring. Seeding or transplanting. Cultivation. Preservation.

Meadows: Their importance. Establishment of artificial, temporary, natural or permanent meadows. Nature and preparation of the soil. Seeding.

Cereals: Wheat, barley, oats, rye, buckwheat. Nature and preparation of the soil. Seeding. Harvesting and storing. Selection.

Forestry: Value of the forests as ornament, as a beneficial factor in hygiene and agriculture. Why they should be protected.

Fruit Culture: Care of young fruit trees up to the day of their coming into bearing. Renovation of the old orchard. Strawberry growing.

Beekeeping: The contents of the beehive. How to have a strong colony for the honey season.

THE OKA AGRICULTURAL INSTITUTE.

BY THE SECRETARY OF THE OKA AGRICULTURAL INSTITUTE.

From January 11 to 23 short courses for farmers were given at the Oka Agricultural Institute. These courses included the following subjects:

FIRST WEEK.

General Farming: Treatment of soils, manures, cultivation, growing fodder crops, cereals, leguminous plants; rural construction and rural bookkeeping: Professor I. J. A. Marsan, and various lecturers.

Gardening and Canning of Vegetables and Fruits: R. P. Athanase and L. Arscott.

Fruit Culture: All the work in connection with the nursery and the orchard: R. P. Léopold, Professor G. Reynaud, P. Honoré, and T. Roy, B.S.A.

By-Products of Fruit Culture: Cider, vinegar, etc., Fr. Sébastien.

Good Roads: Localization, construction and maintenance: Gabriel Henry, engineer.

The Horse: Breeding, etc., Fr. Isidore.

SECOND WEEK.

Cattle Breeding and Dairying Industry: Fr. Isidore, J. E. Trudel.

Poultry: Rev. J. B. A. Allaire, Br. Liguori, Fr. Wilfrid and R. Dumaine, provincial poultry instructor.

Beekeeping: R. P. Maur and Dr. E. Lalonde; bee diseases, fowl brood, etc., J. Beaulne.

Swine Breeding and Preparation of Cured Meat: Professor A. Hansen, Danish expert.

The Maple Sugar Industry: J. E. LeFebvre, Waterloo, Que.

Agriculture and Agricultural Teaching in the Rural Schools: J. C. Magnan, B.S.A.

Co-operation among the Farmers: A. Vanier, LL.B., president of the co-operative store, Montreal; H. Desloges, manager of the co-operative store; Rev. J. B. A. Allaire, lecturer on co-operation, and J. T. Bertrand, scientific agriculturist and engineer, Isle-Verte, Que.

Daily Classes: Three lectures and two classes of practical work.

Organization of Practical Work: Students are divided by groups of say fifteen and the work is done under the direct supervision of a teacher or an instructor who first explains what is to be done, answers the questions, and closely observes the work of each of the pupils. This practical work consists of the following:—

Fruit Culture: Grafting fruit trees.

In the Garden: Making and sowing hot beds, etc.

In the Poultry House: Slaughtering and plucking fowls by the most up-to-date methods, testing of eggs, handling of the incubators.

During the short courses the annual meeting of the Quebec Farmers' Experimental Union, and the annual meeting of the Young Farmers' Association were held.

Attendance: These short courses were followed regularly by 127 students who found board and lodging at the Institute. There were also about one hundred other persons not entered as regular students, who were boarding outside.

AGRICULTURAL INSTRUCTION IN THE SCHOOLS.

BY J. C. MAGNAN, B.S.A., DISTRICT REPRESENTATIVE.

CHILDREN'S GARDEN CLUB AT THE COLLEGE OF ST-CASIMIR, PORTNEUF COUNTY, QUE.

AGRICULTURE is taught at the College of St-Casimir by means of class work and practical demonstrations. This year a Children's Garden Club was organized, the members of which were

In order to encourage the pupils I organized, with the help of the school board, a school fair in the parish on the 12th of September, 1914. Over 175 exhibits of vegetables, 22 sheaves of Banner oats, selected by the pupils in the field, and 18 platesful of fruit were exhibited by the children. Games had also been arranged for during the day



BOARD OF DIRECTORS OF SCHOOL GARDEN AT THE COLLEGE OF ST. CASIMIR, QUEBEC.

selected among the pupils who appear to take a great interest in horticulture.

This club, the object of which is to train children from an early age in agricultural co-operation, is organized on the same basis as the ordinary farmers' club, with a few modifications necessary for the school children. The club now includes some sixty children who are doing horticultural work. All of them had the management of a small garden to which they gave very good care. Some of the pupils had their gardens at home.

in which all the pupils took part.

CHILDREN'S POULTRY CLUB.

A Children's Poultry Club for home practical work on poultry was organized in connection with the College of the Christian Instruction Brothers, at St-Casimir de Portneuf, where 200 pupils received instruction in agriculture.

In the spring the members of the club, numbering about 30, were each supplied by the Quebec Poultry Division with a setting of eggs of Barred Plymouth Rocks. Each of

them had to report on the various phases of the incubation period and the testing of eggs. They also had to record the method of feeding and other observations. Each of them had been supplied with the bulletin entitled "Ten Years of Practice and Experiment with Poultry" published by the Quebec Department of Agriculture.

The pupils took a very active interest in this work which has taught them the value of co-operation; they have also learned to think for themselves, to conduct experiments, and they now have more respect for the agricultural profession. In the fall as a fitting climax to their work, they exhibited their finest chickens at the school fair held at St-Casimir on the 12th of September.

Some sixty-five chickens selected among the finest types of Plymouth Rock were showed at this fair by the pupils. Practical demonstrations on the killing of chickens had also been organized in connection with the

fair by the club, with the generous co-operation of the Quebec poultry division. These demonstrations were seen by some two hundred and fifty children and a part of the population of St-Casimir and have produced excellent results.

Prizes were given to the pupils who had made the greatest success in raising chickens. They were given at the fair by the Quebec Department of Agriculture, the poultry division, the school board and the district representative.

In the fall the club conducted an experiment in crate fattening of chickens with some thirty chickens. These chickens were sold at 18 cents a pound in Montreal while at the same time, in the locality, chickens weighing from four to five pounds were being sold at the price of forty cents a pair.

To sum up, the work of the Children's Poultry Club of St-Casimir has given practical and most encouraging results.

MACDONALD COLLEGE.

SCHOOL OF HOUSEHOLD SCIENCE.

BEGINNING January 5th and ending January 15th the School of Household Science, Macdonald College, held for the second time a series of short courses at various centres of the province of Quebec. Last year saw the

beginning of this movement, and the appreciation shown then justified a similar course being planned this year.

The following table shows the number of meetings held and the attendance at each:—

NAME OF PLACE.	Number of Meetings.	Attendance.		Average Attendance.
		1st.	2nd.	
Knowlton.....	2	35	23	29
West Shefford.	2	35	40	38
Marbleton.....	2	30	3	30
Sawyerville.....	2	90	100	95
Scotstown.....	2	30	22	26
Hemmingford	2	54	50	52
Coaticook.....	1	.	21	21
Lennoxville.....	2	37	50	43
Breckenridge.....	1	26	..	26
Total number of meetings.....	16	Total Average 40		

Although the attendance was in some cases not so large as last year the courses, judged from the standpoint of interest and enthusiasm, were even more successful.

The lectures and demonstrations on the courses this year were as follows:—

Textiles: Miss K. A. Fisher; Pure Food Laws: Miss K. A. Fisher; Feeding Children and School Lunches: Mrs. T. T. Rutter; Planning the Daily Meals: Mrs. T. T.

Rutter; Poultry Keeping for Women: Miss Lena Nicholson; Methods in Laundry Work: Miss A. E. Hill; The Convenient Kitchen: Miss A. E. Hill; The Pictures on our Walls: Miss Thompson; The Relation of the Homemakers' Club to the Rural School: Miss Philp; How to Keep Household Accounts: Miss Philp; Demonstration in Millinery: Miss Alice Zollman; The Homemakers' Club and its Place in the Community: Miss F. Campbell; The Girl on the Farm: Miss F. Campbell.

ATTENDANCE AT WINTER SHORT COURSE LECTURES AT CENTRES IN THE PROVINCE OF QUEBEC, 1915.

	Meetings for		Total.	Number of Meetings.	Average per Meetings.
	Men.	Women.			
Jan. 4. Magog	20	..	..	..	..
5. Ayer's Cliff	25	..	45	2	23
	50	..	..	..	..
	55	..	105	2	53
6. Coaticook	45	21	..	..	..
	50	..	116	3	39
7. Marbleton	36	30	..	..	..
	40	30	136	4	34
8. Sawyerville	65	90	..	..	..
	50	100	305	4	76
9. Scotstown	35	30	..	..	..
	35	22	122	4	31
11. Hemmingford	70	54	..	..	..
	96	50	270	4	68
12. Athelstan	22	..	..	..	..
	49	..	71	2	36
13. Kensington.	48	..	..	..	..
	54	..	102	2	51
14. Danville.....	46	..	..	..	..
	66	..	112	2	56
15. Richmond	43	..	..	..	..
	65	..	108	2	54
16. South Durham.....	35	..	..	..	..
	115	..	150	2	75
4. Knowlton.	25	35	..	..	..
	32	25	117	4	29
5. West Shefford.....	70	35	..	..	..
	50	40	195	4	49
6. Bedford.....	70	..	..	..	..
	32	..	102	2	51
7. Waterville.....	28	..	..	..	..
	63	..	91	2	46
8. Lennoxville.	104	37	..	..	..
	64	50	255	4	64
12. Chapeau...	150	..	..	..	..
	250	..	400	2	200
13. Calumet.	71	..	61	1	61
13. Dunraven.....	62	..	62	1	62
14. Bristol Corners....	51	..	..	..	..
	75	..	126	2	63
15. Breckenridge.....	60	..	..	..	..
	65	26	151	3	75
Totals.....	2,527	675	3,202	58	56

In all 58 meetings at 22 places in 11 counties.

Total attendance, 3,202.

Largest meeting, 250; smallest, 20.

Forty-two of the meetings were for men—total attendance, 2,527—average per meeting, 60; 16 were for women—total attendance, 675—average per meeting, 42.

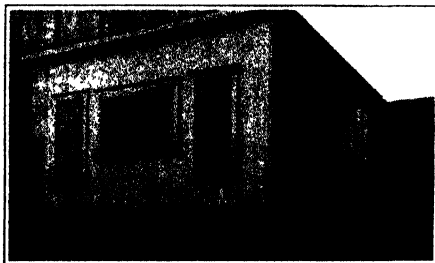
Ninety addresses were given by 17 different members of the College Staff— from 1 to as many as 12 having been given per individual.

DEMONSTRATION POULTRY HOUSES.

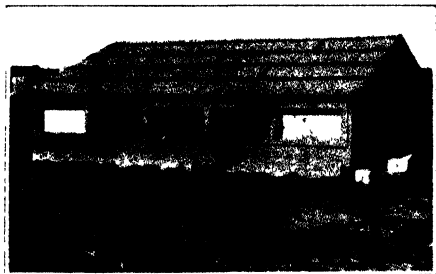
BY M. A. JULL, B.S.A., MANAGER AND LECTURER IN POULTRY DEPARTMENT.

IN order to determine the most satisfactory types of houses for laying fowls for the province of Quebec the Poultry Department of Macdonald College has had erected six demonstration houses in different parts of the province. In Pontiac county the house is located at Yarm on the farm of Mr. Bert Hodgins, the house in Chateauguay is located at Athelstan on the farm of Mr. E. C. Boyce, in Rouville county the house is located at Rougemont on the farm

in view of making the demonstration of as local a nature as possible.



THE "SHED-ROOF" POULTRY HOUSE,
ERECTED AT ATHELSTAN, QUE., AND
AT CAPELTON, QUE.



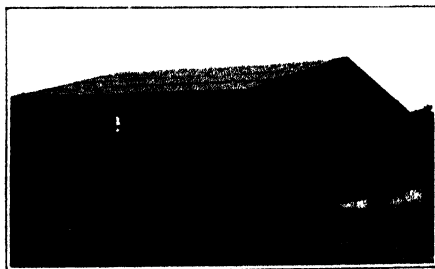
THE "TOLMAN" POULTRY HOUSE,
ERECTED AT YARM, QUE., AND AT
DUNHAM, QUE.

of Mr. Edgar B. Standish, in Missisquoi county the house is located at Dunham on the farm of Mr. G. M. Beach, in Sherbrooke county the house is located at Capelton on the farm of W. G. Loomis, and in Compton county the house is located at Cookshire on the farm of Mr. E. N. Chaddock.

These houses will serve the purpose of experimentation and demonstration, the primary object being the improvement throughout the province of farm poultry housing. The houses have been located on carefully selected farms with the purpose

Three different types of houses have been erected and the conditions of management are made as comparable as possible.

Careful records are being kept for at least three years concerning the management of the poultry plant and expenses and receipts. The houses are open for inspection at any time and farmers are invited to examine the house in their district. Each farmer who has a demonstration house is always glad to assist



THE "MACDONALD" POULTRY HOUSE,
ERECTED AT COOKSHIRE, QUE., AND
AND AT ROUGEMONT, QUE.

the farmers of the community in their poultry housing problems. When the records are completed at the end of three years it is hoped that the available information obtained from this demonstration scheme will be of much value in improving the poultry industry through better housing of the laying stock.

EDUCATIONAL EXHIBITS.

In regard to extension work this department arranges educational exhibits for the larger poultry and agricultural shows held in the English speaking sections of the province. These educational exhibits deal particularly with the commercial side of the poultry in-

dustry. These exhibits are comprised of models of poultry laying houses, brooder houses, trap-nests, fattening crates and batteries, dressed poultry cooling racks, egg cases, shipping boxes, incubators, brooders, and many other models of apparatus used in the raising of poultry. Charts showing the ideal types of the more important breeds of poultry, reading charts which emphasize the leading features of the poultry industry, and other material is used to encourage the interest in poultry keeping. Blue prints, giving plans and specifications of poultry houses, are distributed free as well as our bulletin on "Farm Poultry."

ONTARIO.

INSTRUCTION AT WINTER FAIRS.

BY R. W. WADE, B.S.A., DIRECTOR LIVE STOCK BRANCH.

PRIZE LIST.

A prize list should be as generous as the funds of the Association will warrant. There should be a very strict yearly revision in order to correct errors of judgment and to change classes where owing to increases or decreases, the prizes should be raised, lowered or in some cases, done away with entirely. In making up a prize list, market conditions throughout the country should be observed. A prize given for a class of animal for which there is no market, is a deliberate waste and instead of being an educative feature, is actually the reverse: - example, export steers. Prizes should be so arranged as to bring out those classes, which show various breeds at their best and prizes offered to animals whose utility is questionable (shearling wether) should be made as moderate as possible. The Fair Association and the exhibitor must work together to the

up-building of any show. The exhibitor's standpoint may be more or less commercial. The show management must never be but must always look to that arrangement of exhibits, prize money, and program of judging, which will tend to be the most educative to the visitor at the same time not bearing too heavily upon the time of the exhibitor.

ADVERTISING.

The advertising in the prize list must be in every case from reputable firms of high standing. The least tendency on the part of a show to include questionable firms in their advertising columns, will prove detrimental, as the public will not have that confidence in the management and trust in the printed page of the prize list. The firms contributing to the advertising pages, should be those that are more or less intimately connected with agriculture.

ARRANGEMENT OF EXHIBITS.

Exhibits should be arranged in breeds and classes where at all possible. This can be done with poultry, beef and dairy cattle and to a considerable extent with sheep and swine. With the horses, it is somewhat different as owing to the care and work involved, it is necessary that animals owned by each exhibitor be placed by themselves. As soon as the exhibits are in place, the catalogue number should be tacked to the stall in order that the visitor may, from the catalogue, have information regarding the animals on exhibit. As soon as prizes are won, a prize card corresponding in colour to the ribbon given, should be tacked under the catalogue number. Where animals are placed in classes, this gives the visitor and student of live stock, an opportunity to study the work of the judge and to thereby learn the type of the various breeds and the points of excellence desired by the judge. In the case of *carcasses*, these should be placed in order of merit that the stockmen and visitor may be able to see the desirable points of a carcass and where one exhibit is superior to the other, which he cannot do if the prize winners are not placed in order, it being impossible for a person to carry the idea of uniformity, evenness of fat, thickness of fleshing, in his mind when having to go from one section of the carcass room in order to see the next prize animal in some distant section. The *poultry coops* should have on them a card bearing the catalogue number, sex, class and the owner's name, and a small sticker, showing the prize won. This gives the fancier an opportunity to study the work of the judge. It makes the judge more careful in his awarding of the prizes and the casual visitor has something more to study than merely a row of birds. The leaving off of sex and prize on the card, does not give the visitor a chance to know which bird was the actual winner, where double cooping is practiced.

Where space is available, the *swine* exhibits can be arranged in breeds and classes and the arranging of them this way with the coloured card, showing the prize won, is not only of advantage to the exhibitor who gets credit for the prize, but to the prospective buyer who has an opportunity of studying the type of his favourite breed. In the case of the breed champions, they should have a separate pen and some distinctive card showing that they are the champions of the breed and thereby attracting the attention of the visitor. If space permits, *sheep* should always be arranged in breeds and by having a series of moveable pens, the first, second and third prize winners in each breed, should each have a small pen to itself, with the prize card and catalogue number. These winners should be side by side and if this were followed in all classes of sheep instead of the sheep exhibit being little visited, it would prove to be one of the exhibits which would create a great deal of interest and instead of the paltry few dozens who now visit the sheep pens, the visitors could be counted by the thousands. The *dairy cows* must be placed in breeds and classes and after the test is over, which should be as early as possible, the cows might better be placed in order of merit, so the visitor would have the best opportunity to study individual excellence. The result of the dairy test must be out early in order to give people who are visiting the show the first two days, as good an opportunity to see the prize winning dairy stock, as those who come later. The *dressed poultry* exhibit should be carded in order that the farmers may be able to see exactly what breed shows the greatest excellence and if an explanation were put on the card of the group exhibits, it would be educative in effect.

PROGRAM OF LECTURES AND JUDGING.

This must be so arranged as to

give a maximum of interest and attendance. Where space is limited, it would appear to be good also instead of having two good days, at the middle of the show, to make the program day by day so uniformly excellent that there would be a tendency to distribute the attendance over four days rather than to have a tremendous congestion for two days and light crowds the opening and closing days. *Lectures* should not be held when interesting classes are being exhibited in the ring and evenings might be better given over to various association meetings than to lectures, which are often so poorly attended. Possibly the holding of one lecture each afternoon from 1.00 to 2.30 would prove satisfactory; commence judging in the ring at 2.30. The managers of the show should make it their aim to have all necessary information posted on a bulletin board or announced from the arena at stated intervals, so that the visitor may not only have the official program as a guide but if any additional attraction or information is forthcoming, he will be in a position to know in time to take advantage of it. It might take a year or two to get the visitors and exhibitors taking advantage of a bulletin board but once they see it's advantages, they will be on the alert to find if there is any information that the management has secured and which the management wish the exhibitors to have knowledge of. This is undoubtedly true in regard to the issuing of freight certificates, the securing of prize money and the time trains will be ready for the stock. The management should also have a railway time table in various parts of the building, so that the visitor will feel as if he is being looked after and will not miss trains owing to lack of knowledge. In case of change of trains or special trains being put on or delayed, the bulletin board would prove a very satisfactory source of information. If feasible, *lantern slides* giving the placing of

the classes, would be exceedingly valuable. Where this is not done, the best of help must be in the ring-side in order that the information regarding the prize winners shall be given quickly and accurately to the spectators. The management must see that the judging program as well as all other events shall occur as given in the program and where possible in the official program, which is mailed previous to the show, and contains the various classes and when they are judged in order that the man living at a distance from the show may be able to attend that particular day when his favourite breed or class is to be judged. If he is unfortunate enough to miss the class when judged, then through the catalogue and prize card on the stall, he will still be able to see the prize winners that were before the judges and to draw his conclusions therefrom. The lecture program should really be more of a convention of the live stock interests, where some well known authority gives an address on a topic which is of immediate interest to that particular section of the country at that particular time, illustrating where possible by means of slides. The lecture need not be long and may be followed by a discussion. This, of course will be at its best only when the chairman has such a knowledge of the wants of the country and sympathy with the farming interests as to bring out to the greatest degree that free expression of speech which should make every lecture at a winter fair, of the greatest interest to the agricultural community.

CATALOGUE.

After the exhibition is over, if it could be worked out satisfactorily, a large number of catalogues could have been left in the press and the prizes awarded could be set up on the margin, thus making the catalogue an absolute, official report of the show. The poultry man should have

a small separate catalogue, giving the catalogue number of birds exhibited and prizes given. The same would apply to the seed growers and these catalogues with the prizes marked, would prove of great advantage to the exhibitors at the show. If it were found that it was not wise to put the prizes on the margin, the catalogue of live stock, poultry and seed, would still be valuable as a means of giving information to stockmen and grain growers in other parts, as to what man had particular classes of product for sale and to enhance the reputation of the exhibitors, there should be a culling committee, so that every person whose name appeared in the official catalogue, would be as it were O.K'd by the management, that is to say, his exhibits were counted of sufficient quality to enter for competition at the winter fair. In the building or making additions to a building, space should be left for the exhibition of animals alive and similar animals dressed. It would also be to the advantage of the educative part of the show to make arrangements with college or leading stockmen to have prepared a number of animals of the highest market value, so that the live animal and its mate killed and dressed with values given, would be available to the stockmen and visitor.

The above notes give in a rather disconnected way, features which should make a winter fair more attractive to the people and therefore

a show able to pay such prizes as would make it very attractive to the stockmen. It is rather a difficult matter to get the heartiest co-operation of the exhibitor on what he might consider to be mere fads; however, as time went on and the men with the good stock given a superior opportunity to display them and the education disseminated by means of the show through the visitors, catalogues, publicity, etc., the most progressive exhibitors would come to see these special features were to his interests as well as to the general welfare of the show. Most of these special features do not entail a great outlay of money but where the management is endeavouring to give as good a prize list as possible, every dollar spent on special features would appear to many to be just like taking the money from the exhibitors. It would then seem, in order that any winter fair should put on exhibits from the highest educational stand point, that some other source of revenue is required outside of entry fees, association grants and gate receipts. It would not be well to increase the revenue to too great an extent by advertisements, as only the advertising of standard goods from reliable firms would be tolerated. This would lead to the conclusion that any winter fair to do the utmost good, should be generously supported by either county, provincial or federal grants.

DOMESTIC SCIENCE COURSES.

THE Institutes Branch of the Ontario Department of Agriculture arranged and conducted four weeks' Domestic Science Courses at Kilsyth in Grey county, Ont., from January 12th to February 5th, and at Aylmer, Ontario, from January 26th to February 19th 1915. These courses consisted of 32 lessons,

16 morning classes for girls and 16 afternoon classes for girls and women. The subjects receiving special attention were as follows:

1. Fruit—typical methods of cooking, combinations; different ways of serving fresh fruit.
2. Vegetables—fresh, starchy and dried.
3. Milk—soups, puddings and combina-

tions with special relation to infant, children and invalid diet.

4. Cereals and Cheese—various ways of cooking; their high food value compared with other more expensive foods.

5. Eggs—correct methods of cooking; varieties in methods; storage.

6. Meats—tender meats; roasting and broiling. Tough meats, braised dishes, stews and soups. Food values and methods of cooking the different cuts.

7. Baking powder, bread and fancy yeast breads.

8. Cakes and little cakes.

9. Puddings and desserts.

10. Salads—preparation of the ingredients, dressing, etc.

11-16. Instructions in poultry raising and dairying.

The morning sessions were in correlation with these, including sub-

jects like breakfast dishes, supper dishes, made over dishes, pastry, beverages, and light refreshments, invalid cookery, meat substitutes, table setting and serving. The comparative value of our more common food stuffs were given consideration and illustrated by use of charts.

The class at Kilsyth included 40 girls and women, with an average attendance of over 30, while at Aylmer the attendance on the second day of the course numbered 78.

A new feature in connection with these courses was the giving of instruction to the boys, girls, men and women, at the same time, by the same instructor, so far as the poultry and dairying part of the programme was concerned.

MANITOBA.

HOUSEHOLD SCIENCE INNOVATION.

AN innovation in Household Science teaching, in so far at least as this country is concerned, has been established at the Manitoba Agricultural College.

Recently a number of young men who are homesteading, or who expect to be otherwise dependent upon their own resources, expressed a desire to secure lessons in Cookery. When the announcement was made that instruction would be given in this

subject at the end of the day, during the hour set apart for recreation, a class of 37 came forward to assure the management of the College that they were anxious to take advantage of the opportunity to further equip themselves in this way for the emergencies of life.

These young men may be seen almost any evening from 4.30 to 5.30 preparing for the larger responsibilities of the home-steader.

It is the duty of all Canadians to do as they are able in this destructive war. The best forces should be utilized in getting out the most from the soil. The responsibility bringing the war to a successful close lies largely with the farm producers. The question of greater efficiency in production should be carefully studied.—*Prof. G. E. Day.*

SASKATCHEWAN.

DEPARTMENT OF AGRICULTURE.

SOME WORK OF THE BRANCHES IN 1914.

FOR convenience most of the work of the Department of Agriculture is apportioned among branches each of which is under the direct charge of a head who is specially qualified for his or her work, and is responsible to the Deputy Minister. Such work as is not assigned to or undertaken by some one branch is directly under the supervision of the Deputy. The following statement presents in concise form some particulars of lines of work that can be mentioned in such a way, and as may be of interest to readers of THE AGRICULTURAL GAZETTE.

DAIRY BRANCH.

Staff: Commissioner; assistant commissioner; grader; 4 instructors; accountant and 8 clerks,—exclusive of creamery managers and operatives.

Appropriations: \$30,000 (exclusive of amounts advanced and recouped in connection with operation of creameries under annual agreements).

Revenue: \$7,500.

Operation of Co-operative Creameries:—Thirteen creameries were operated, 3,625 patrons supplied cream, 72 patrons supplied milk, 1,161,230 pounds of butter were manufactured during the summer months, the approximate value of which was \$295,264.59. Approximately 300,000 pounds of butter were made during the six winter months, 1913-14, and this had an approximate value of \$93,000; 33,270 cheques were issued to patrons; 47 visits were made by creamery inspectors.

NOTE:—All appropriations and estimated revenue are for Fiscal Year May 1st, 1914, to April 30th, 1915.

Development Work:—Fifteen districts were visited by instructors and creamery managers; 250 farmers and 37 milk shippers were visited; 95 institute meetings were attended; 6,473 persons received instruction at institute meetings.

Poultry Work:—Three fattening stations were maintained; 1,467 birds were fattened; 68 farmers supplied birds; 5 demonstration fattening stations were operated; 120 birds were fattened in demonstration stations.

LIVE STOCK BRANCH.

Staff: Commissioner, assistant commissioner, veterinarian, 4 buyers and inspectors, 8 clerks.

Appropriations: \$35,000 (exclusive of amount available for purchase of live stock under The Live Stock Purchase and Sale Act).

Revenue: \$8,000 (exclusive of payments on live stock under above named Act).

Live Stock Distribution:—Five hundred and twenty-five head of cattle were imported and distributed; 41 being pure bred bulls; 600 grade ewes were also distributed; 16 horses and 82 pure bred bulls were sold at the stock sales held in connection with the Winter Fair. At the annual Sheep and Swine sale 62 pure bred rams and 14 pure bred boars were sold, also several pure bred ewes and sows and goats.

Stallion Enrolment and Licensing:—Eight hundred and ninety-four horses were enrolled, 641 being pure breds, 137 grades and 116 scrubs; 219 transfers of enrolment were registered and 1,465 enrolments were renewed. Four hundred and eighty-two pure bred stallions were examined, 333 being licensed, 69 re-

ceiving temporary licenses; 65 were given permits and 15 were rejected. Four new municipalities were admitted as units of the Licensed Stallion District and eight were permitted to withdraw (in all but one case on account of an insufficient number of licensed horses) making the total number of rural municipalities now comprising the Licensed Stallion District 63.

Miscellaneous:—A bulletin on Enrolment and Registration of Stallions in Saskatchewan was prepared, 5,000 copies were printed and 4,500 copies distributed. A bulletin on the Care, Handling and Marketing of Wool was prepared, 1,000 copies were printed and distributed among sheep owners in the province. A pamphlet on Blackleg was issued and upwards of 3,000 copies were distributed. Press bulletins, dealing with seasonable live stock topics were issued throughout the year.

WEED AND SEED BRANCH.

Staff: Commissioner, 5 field representatives, 2 clerks.

Appropriations: \$13,800.

Revenue: Nil.

Administration of The Noxious Weeds Act:—The work of 45 agricultural secretaries and 730 weed inspectors, all appointed and paid by municipalities, was supervised by 5 field representatives of this branch. These men also assisted on the Better Farming Train and held 110 institute meetings. A ten-day short course for agricultural secretaries and weed inspectors was held in Regina in June. At this the average daily attendance was 80, but a total of 130 municipalities were represented.

Miscellaneous:—A total of 12,730 circular letters on 37 different topics were sent to municipal officers and others. Supplies of The Noxious Weeds Act and bulletins were sent to each agricultural secretary, or weed inspector, for distribution. Bulletins, copies of The Noxious

Weed Act and threshing machine cards were also mailed on request to many municipal officials; in all a total of 12,000 copies of the Act; 15,000 Weed bulletins and 13,000 threshing machine cards were distributed. Two thousand each of 7 separate leaflets on agricultural secretary work were issued and 4,500 posters drawing attention to the importance of testing seed grain were printed and distributed.

CO-OPERATIVE ORGANIZATION BRANCH.

Staff: Director, assistant and clerk.

Appropriations: \$9,000 (exclusive of wool accounts).

Revenue: \$2,500 (exclusive of wool account).

One hundred and thirteen agricultural co-operative associations have been registered. These have an average authorized capital of \$6,900. In connection with this work the director attended and addressed 20 meetings and 5 farmers' conventions.

Nine thousand copies of The Agricultural Co-operative Associations Act were printed and 5,000 copies have been distributed; 20,000 pamphlets explaining the provisions of the Co-operative Act were prepared and printed and 15,000 copies have been distributed; 1,000 copies of The Co-operative Associations Act and Standard By-laws were printed in German; 500 copies of Extracts from The Companies Act were prepared and printed and 200 copies have been distributed.

A pamphlet on Live Stock Marketing was prepared; 5,000 copies were printed and distributed. A pamphlet on Co-operative Beef Rings was prepared; 1,500 copies were printed and distributed. A bulletin dealing with Live Stock Marketing was prepared; 5,000 copies were printed and distributed.

During the summer a co-operative wool marketing project was inaugurated through which the wool from 180 flocks, amounting to 69,404

pounds, was marketed for farmers in the province, at a price that netted the producers an average of 16½ cents per pound, an advance of about 4 cents over the price usually obtained locally by individual small flock owners.

Better Farming Train.—For five weeks during the months of June and July the department with the co-operation of The Canadian Pacific Railway and the Saskatchewan College of Agriculture, operated a

Better Farming Train on the Canadian Pacific Railway lines in the more recently settled portions of the province. This train, carrying a staff of lecturers and a large quantity of demonstration material of interest to farmers and farm women, visited some 88 towns and villages, a stop of from three to three and one-half hours being made at each point. An average of over 400 people attended the meetings at each point. A total of over 36,000 persons received instruction.

A PROFITABLE CROP POSTER.

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE.

THE Department of Agriculture of Saskatchewan has issued for general distribution over the province, posters and circulars containing instructions for the growing of profitable crops. The matter grew out of the realization, by the Honourable Mr. Motherwell and myself, that the lamentable crop failure in south-western Saskatchewan in 1914, need not, and would not, have been anything like so disastrous as it was if a larger percentage of the men in that area had been thoroughly apprised of the fundamental truths underlying profitable crop production on dry lands. We recognized that, for one reason or another, there were a great many men who are not reached or influenced by extension meetings, short courses, bulletins, farm journals, or any other existing means of agricultural instruction, and we felt that these fundamental truths underlying profitable crop production could, perhaps, be brought to the notice of this class of our farmers by means of a poster on which the information would be presented in short, pithy, concise and unconventional form.

Then, to accompany the poster, we presented the same information in leaflet form, so that the man who

possibly was interested in what he saw on the poster might put the leaflet into his pocket and read it over and study it after he got home.

We have already had to print twenty thousand copies of the leaflet and four thousand copies of the poster and fully expect that additional quantities of the leaflet will be required. Branch banks, lumber companies, municipal officers, grain growers' associations and others are writing in for anywhere from twenty-five to five hundred additional copies of the leaflet.

Our arrangement with the banks, by which they provide in each branch office in Saskatchewan a bulletin board for agricultural bulletins and notices, and we provide the material to be posted on the boards, is now in working order, and the first batch of material has gone out. We expect that a number of progressive general merchants, lumber dealers and other business men in country towns will be interested in these bulletin boards and want to provide one for their own place of business. We shall be glad if they will do so and will willingly supply them too with the same material as is supplied to the branch banks.

SUGGESTIONS TO AGRICULTURAL SECRETARIES.

THE Department of Agriculture is publishing in the form of a leaflet an outline of a number of lines of demonstration work which it is hoped will be taken up and energetically prosecuted by the municipalities through their agricultural secretaries.

It is suggested to the secretaries that a number of contests should be instituted, which will be conducted by the municipalities themselves and not by the department, as it is believed they will gain more by helping themselves and that the good results will be brought more closely home to them in this way. The department, however, will aid in the work, by supplying the seed, by sending representatives to visit the contestants, and in other ways. The following are the lines of work suggested:—

1. Demonstration tests of moisture in the soil. The department will supply the apparatus and full instructions.
2. Co-operative tests in growing alfalfa for seed.
3. Potato growing contest. This is in order to show the improvement which may be effected in the yield and quality of potatoes.
4. Municipal Seed Growers' Associations. This is to encourage the production of seed of maximum yielding power, by hand selection and other methods. It is hoped that from this work co-operative seed growing associations will be developed.
5. Boys' Pig Feeding Competition. This is in order to emphasize the import-

ance of details in the management of swine.

6. Co-operative Experiments in Variety Tests. This is to determine the variety of oats and barley best suited to a particular locality.
7. Contest in the growing of fodder corn. This is to develop the possibilities of growing corn for fodder in Saskatchewan.
8. Competition in the growing of seed corn. This is an endeavour to show the possibilities of maturing some of the early varieties of corn.
9. Boys' and Girls' 100 yard row yield competition. This competition will demonstrate the importance of high class seed.

Progressive municipalities are invited to undertake this work through their agricultural secretaries with the co-operation of the department in supplying the seed necessary for each suggested line of work. Departmental support is confined to municipalities employing agricultural secretaries because only in such cases can this work be economically and satisfactorily carried to fruition. It is certain that if the suggestions are carried out it will result in much benefit to all concerned and in the acquisition of a store of useful information and experience.

PAMPHLET ON WINTER RYE.

A pamphlet is being prepared by the Department of Agriculture on winter rye growing. This grain is very little grown in the province and little is known about it. The pamphlet will go far to remedy this lack of information.

ALBERTA.

CORN GROWING.

BY GEO. HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE.

SO far but little attention has been given the growing of corn in Alberta. The various varieties of squaw corn have been

grown in the usual way at numerous points more or less continuously and with moderate success, while the cultivated varieties have been tried

only in a fitful manner at widely different points. So much success has attended these efforts however, that more extended trials are warranted. This idea is also strengthened by the fact that at a number of points well-ripened ears have been shown at the local seed fairs. With the arrival of a large number of American farmers during recent years, who have been accustomed to growing corn, more extended trials are being made and the conclusion is being gradually reached that there is, in an average of seasons, sufficient heat and a long enough growing period to produce ripened ears and in any event a very large amount of fodder.

On the Medicine Hat Demonstration Farm corn for fodder purposes has been grown successfully for three successive years, the fourth year was last year (1914) and the droughty conditions interfered with obtaining a full stand at germination time and also with subsequent growth. In spite of this a nice lot of fodder was obtained. On the Sedgewick and Vermilion Farms in 1913, nine and four acres respectively were grown. These plots furnished a lot of feed as the corn grew to a height of eight feet and gave a yield of about eight tons per acre. It did not ripen or cob as well as a seven acre plot at the Medicine Hat Farm. Both lots were sufficiently matured to put in a silo and made excellent silage.

A number of varieties were tested and the following order indicates those proving most satisfactory: North Western Dent, Compton's Early, King Phillip, Longfellow and Gehu. On the Medicine Hat Farm a considerable amount of King Phillip ripened sufficiently for seed. If seed can be produced it will not be long until hardier and earlier maturing strains will be available. It is said the corn belt is moving north at the rate of about five miles a year.

At the three Provincial Schools of Agriculture, Claresholm, Olds and Vermilion, experimental plots were seeded with some thirteen varieties

of squaw, pop and field corn. At Claresholm, Minnesota 13 was by far the leading variety for ensilage purposes, then Longfellow, Yellow Flint, North Dakota Yellow Flint, North Western Dent, Gehu and Free Press. Yellow Flint and Free Press developed the ears so close to the ground as to make harvesting difficult. The results were so satisfactory that one is able to predict that the day is not far distant when corn for fodder and ensilage purposes will be grown generally in southern Alberta.

At Olds the corn made a growth of approximately four feet in height and nubbins were formed, but the cold weather checked it so that no ears matured. Quebec Yellow was the most promising variety at the Vermilion School, while on the Demonstration Farm there, the corn made a very nice article of ensilage. The same was true of the corn on the Sedgewick Demonstration Farm.

Late spring frosts, early fall frosts and cold summer nights are the conditions that militate against successful corn growing. Consequently, seeding must not be too early and yet just as early as one dare in order to obtain as long a growing period as possible. About the 12th to the 20th of May will likely prove a suitable period for planting in the various districts of the province. Farmers will also learn to cultivate the land intended for corn several times in the spring before planting in order to warm it up and make it more suitable for the growing corn.

The methods of seeding, cultivating and harvesting are practically those generally followed elsewhere.

In conclusion it can be said that it will be some years before corn will be grown extensively in Alberta. On the other hand, in view of the results obtained by individual farmers and by the Dominion and Provincial Stations, corn is a crop well worth the serious consideration of every man who is feeding cattle, especially those engaged in dairying, on account of the bulk of succulent feed it produces.

PART III.

Provincial Departments of Education.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF EDUCATION.

THE MODEL SCHOOL GARDEN.

NOVA SCOTIA.

BY L. A. DEWOLFE, DIRECTOR RURAL SCIENCE SCHOOLS.

THE ideal school garden can seldom, if ever, be realized. A more or less near approach to it, however, is often possible.

The accompanying diagram suggests one of the many possibilities. A general diagram, however, must be modified to suit the size of the school grounds, the number of children, the ambition of the teacher, the slope of the ground, and the exposure of the ground relative to sunlight and prevailing winds. While drawing the diagram accompanying this article, I had in mind a school building facing south, with ample room at the back for a garden. In such a case, the spruce hedge or mixed wildwood would serve to keep off the cold north winds. Some school grounds are bordered by natural wood lots. Where this is true, there is no need of planting a wind-break.

The diagram is drawn to the scale of 20 feet to the inch. The left border is about nine feet wide. The hedge of Japanese rose (*Rosa rugosa*) will require about four feet. In front of that can be planted about thirty rosebushes consisting of ten or twelve popular varieties. That

will make one border a solid mass of rose bushes.

These borders are to be permanent. Therefore, they are planted with shrubs and perennial flowers. The back border is an exception; for if it be planted with native shrubs, trees and ferns, the cultivated flowers will slowly be crowded out. For that reason, sweet peas and other tall annuals or biennials may be planted for a few years until the wild border is established.

In the front border, ornamental shrubs are placed every ten feet; and perennial flowers occupy the space between and around them. The names of the shrubs are written parallel with the shorter diameter of the garden.

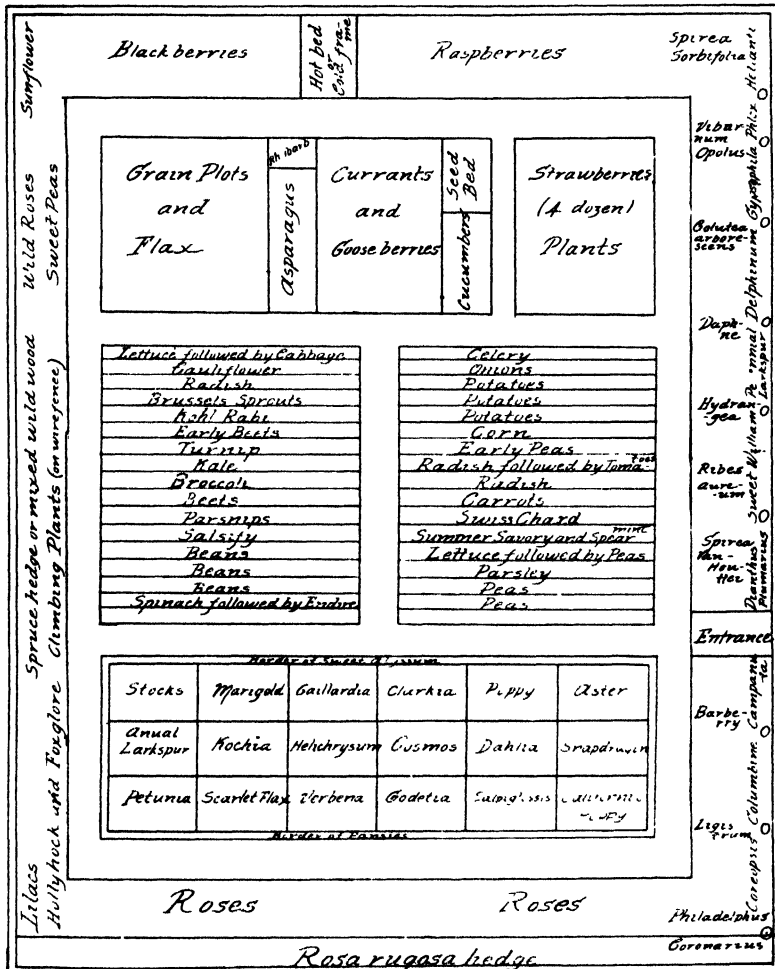
Blackberries and raspberries make a useful border for the remaining side.

The garden proper should have flowers, vegetables, grains and small fruits. The diagram shows the distribution of these.

In planting the flowers, I would not make raised beds. Between one flower plot and the next, I would leave a path two feet wide. Thus,

for early weeding and cultivation, the children can walk around every bed. When the plants are full-grown, the paths will be lost; but at that time no one needs to walk among them. The flowers in the centre plots are sufficiently tall to be admired from the path that sur-

row of radish comes between. These will be gathered before the other vegetables need the extra room. For the same reason, early beets come between kohlrabi and turnips; and early peas and radish border the rows of tomatoes. This will illustrate what is known as *companion crop-*



A SCHOOL GARDEN PLANNED BY L. A. DE WOLFE, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION FOR N.S.

rounds the whole flower garden. In fact, there are only four plots that do not border this path.

In the vegetable garden, the rows are uniformly twenty inches apart. As cauliflower and brussels sprouts should have more room than this, a

ping. Successive cropping is illustrated where cabbage or peas follow lettuce, endive follows spinach, or tomatoes follow radish.

Furthermore, all members of the cabbage family are planted together. This will make more convenient the

control of the cabbage worm. Extra rows of beans and peas will supply abundant material for demonstration in canning green vegetables. Moreover, some vegetables are introduced which are not in general cultivation on the home farm. Thus the school becomes the experimental station for novelties.

The omission of pumpkins and squash was intentional; for they demand more room than is usually available in a school garden. Here is where the home garden should supplement the school garden. Many children will want to plant at home the things they see planted at school.

More than two-thirds of the garden is planted with annuals. These come in one block, which will enable that part to be plowed.

Possibly one should specify varieties of each vegetable and flower recommended. That has both its advantages and disadvantages. Some

mechanical teacher, if she could not get the variety recommended would not plant any. It is better, I think, to get bulletins and reports from the Department of Agriculture, Ottawa, or from the Provincial Departments, and select from the varieties they have successfully tested.

The size of the garden in the diagram is 100 feet by 80 feet. Deducting borders and outer path, the permanent garden is 72 by 57. In a small school, this could be reduced, making every plot half size and every row half length. It would be better to reduce the size than to omit any part.

Where this garden would exist year after year, the annual flowers would be varied. Crop rotation should be exercised.

Out of the many possibilities, therefore, the diagram suggests one not to be followed literally; but to be adapted to local conditions.

NEW BRUNSWICK.

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

AGRICULTURAL EDUCATION.

SCHOOL properties are owned by the districts. They are under the control and care of trustees elected at the annual school meetings. They include school grounds, buildings erected thereon, furniture and apparatus for teaching. It is therefore of prime importance that, if a school garden is to be established, official recognition be obtained. Not only is mere consent needed but the co-operation and sympathy of trustees, and at least of some of the ratepayers are very necessary.

The trustees should feel that the same responsibility that they bear in respect to care of furniture and apparatus in the school house, should be borne in respect to the premises, and therefore to the garden. Special school officers and teachers should

never lose sight of this fact. The Departments of Education and of Agriculture in this province require that a notification signed by trustees and teacher be filed early in the term if grants for school garden work are expected.

While garden work may be initiated at the beginning of the winter term (in January) we believe that the summer term (August), the beginning of the school year, is the proper time at which to begin.

Assuming that these preliminary conditions have been fulfilled, the location of the garden is the next point to be considered and decided upon.

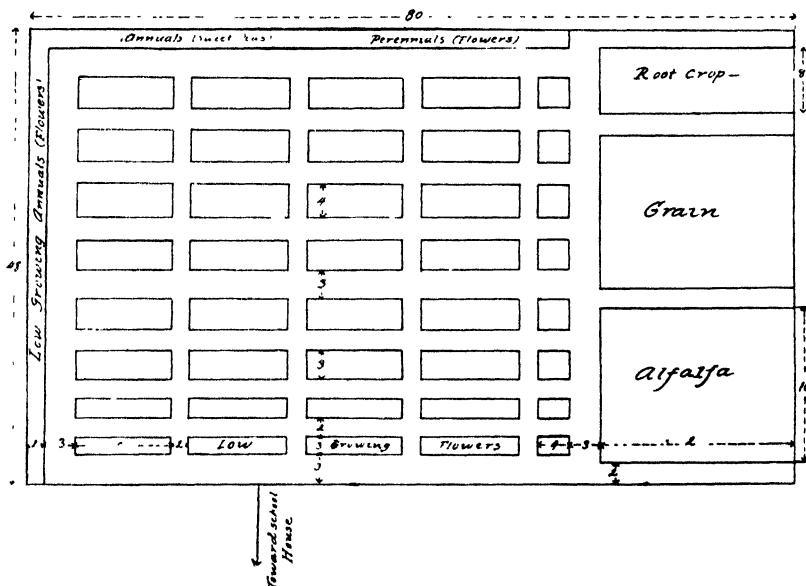
1. It should be on, or contiguous to, the school ground. According to law the school ground especially in country districts should be one acre in extent. Except in the case of large

semi-rural schools this area will afford ample space for a school garden without unduly entrenching upon the play ground portions. It is a fact that many of our school grounds are much smaller than they should be. They are often rough and rocky and in some cases badly drained. Where grounds are too small, more land should be purchased. Where they are unsuitable a near location, across the road, in full sight of the school and easy of access, is imperative. The influence of the work upon the life of the school is weakened if the

of the premises not to be interfered with by the children at play.

3. Another feature to be considered in selecting a site is that the ground is well drained, or at least capable of drainage. This is quite as important as that it be not rocky or shallow.

After the location has been decided upon the next consideration is size. This depends upon the number of pupils usually attending the school. We do not think that any school garden in order that Trustees' and Teachers' grants be paid should be



A SCHOOL GARDEN PLANNED BY R. P. STEEVES, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION FOR NEW BRUNSWICK.

garden is far away or out of sight from the school house. Little or no time should be lost by pupils in going and coming between school house and garden.

2. It should occupy a conspicuous position. It should therefore not be located at the rear of the school premises but front on the street which the house faces. The form of a narrow strip along one side of the grounds is not desirable. It is also necessary that it be far enough removed from the play ground portion

smaller than 40 x 50 feet or 2,000 square feet. Such an area for a school having 20 pupils with from 8 to 12 of them in the upper grades should afford satisfactory space for good work. This area should increase as schools are larger until a half acre is reached. Only in the case of large schools should this be required.

Next comes the fall preparation of the soil. If land is in sod shallow ploughing should be done in August or early in September and stones picked off. From time to time culti-

vation should be given to break up the sod and aid decomposition. In November before ground freezes a second ploughing quite deep should be given and a liberal dressing of barnyard manure applied.

During the winter it will be found of advantage for each pupil under the direction and guidance of the teacher in the school room to draw to scale a plan of the garden from measurements made in the fall. This plan should show walks and plots. The principal walks should be from $2\frac{1}{2}$ to 3 feet wide. Except on the rear sides of the garden where borders extending to the fence may be allowed, walks about the entire plot should be 3 feet wide. One drawn longitudinally through the centre might be of the same width. Other walks if two feet wide will generally be found satisfactory.

Plots from $2\frac{1}{2}$ to 4 feet wide and 10 feet long according to the age of pupils working on them, will be found to give good results.

For experimental plots in which the whole school may be interested 8 x 10 feet has proven good. In the smaller plots named above individual pupils should have charge. Ownership gives responsibility and best permits of a purpose being worked out to a finish. No more than two pupils can well conduct one plot and in such cases an equal division should be made.

While the plan is being made during the winter, talks will be conducted dealing with the kinds of seeds that will be planted and the proper relative places for each kind.

Low growing flowers might well come in narrow plots at the front next to the street and taller growing annuals and perennials on the fence side farthest from the school house. On the rear side tall growing annuals such as sun flowers will look well.

Care is needed so that tall plants may not obstruct the growth of low growing ones and also that the view

from the street and from the school house may be the best.

A loam soil will be found well adapted for level or nearly level cultivation. If surface of plots is much higher than the walks, should the season prove dry, the earth dries out more rapidly and the growth of plants is retarded.

Where the soil is clayey, or where it has not been heretofore well drained, a liberal dressing of lime, in its natural condition if obtainable, will be found of advantage. In any case during the fall it is well to study the character of the soil of the garden and make tests for acidity, amount of humus, and water content.

As soon as the ground is really fit to work in spring cultivation should begin followed by the lay out of the walks and plots. Stakes, four for each plot, and two or three good garden lines are essentials. These stakes should be one inch square, at least $1\frac{1}{2}$ feet long and neatly sharpened. They should be driven into the ground at the corners of plots leaving about three inches showing above the surface. The precision, accuracy and neatness exercised in this laying out work are of the utmost importance. Not only is the appearance of the garden greatly enhanced by attention to these details, as an educative process for the children they involve training in character.

Soil should be worked only when in a fit condition. It is imperative that a fine firm seed bed be secured. The seed drills need to be straight and regular. When the seeds are deposited and covered to the proper depth, from about one-quarter to one half an inch according to the size of seeds and the fineness of the soil, the earth should be firmed down. This can be done by walking on a board placed over the seed row.

Much depends upon being ready to begin work when the spring time arrives. The required seeds, decided upon during the winter, should

be on hand. They should have been tested for germination. Tools also ought to be in readiness in condition for work. Punctuality, forethought, being prepared to act, often spell more than mechanical success.

The accompanying plan represents merely a few suggestions for a plain garden that might easily be modified or extended to suit conditions of any locality. Much more elaborate designing may be desired by some. Such may recognize in this plan principles for application that may be useful. At least it presents in the concrete some of the ideas expressed in this article. Originality and individuality are not to be repressed. Teacher and pupils working together to secure a well planned garden adapted to local school ground facilities will in itself be an educative factor of no little importance.

If school ground is not enclosed a neat woven wire fence with a fair sized gate is imperative for this garden. Although the road law may prohibit animals from running at large, a fine garden might be destroyed by a runaway or other unforeseen

occurrence. If school ground is fenced this should be all that is necessary. Provision should always be made for getting on the garden with a team to plough and harrow.

If at the first of the winter term, school gardening be decided upon, the study in the school room of soil, its physical properties, its chemical elements, of seeds, what they contain, their germination, may with great advantage be taken up from January to March. All this work should be experimental in its character. The children should learn by doing. Talking with them alone, they being merely passive participants is not a system calculated to arouse interest and secure attention. The principle to act upon is "learning by doing."

Such work attractively presented and faithfully carried on will induce thought and prepare pupils to enter upon the outside active work in spring with intelligent purpose. They will have been taught how to observe and how to make records of their observations. They will not easily abandon their plots when vacation comes.

QUEBEC.

BY J. A. GRENIER, B.A., SECRETARY DEPARTMENT OF AGRICULTURE.

HORTICULTURE and school gardening play an important part in the rural school and even in schools of small towns and cities, as it is just as important to develop a liking for agriculture among city children as among rural children. A great deal would be gained if, by teaching horticulture in model schools, normal schools and colleges, we could make the young men understand the usefulness of the farming occupation and thereby remove this feeling of contempt which too many have for this profession.

I am pleased to mention here the interest which the Laval University

of Quebec takes in the agricultural movement. The University has just prepared a programme for the teaching of horticulture which will be followed by the great convents that are affiliated to the University.

The Department of Agriculture is fully aware of the importance of school gardens; they provide the easiest means for reaching all children; this work is as pleasant as it is useful for the pupils; through them the schoolmaster or the schoolmistress are able to teach the best principles of farming and to demonstrate, by object lessons, that success in agriculture, as elsewhere, always de-

depends on the amount of care and intelligence bestowed.

There were practically no school gardens in the province some twelve years ago; the first were inaugurated by Mr. O. E. Dalairé, Director of the St. Hyacinthe dairy school, who was entrusted with their management up to the present time. His first reports to the department date back to 1906. There were, at that time, only twenty-eight school gardens in the province, distributed in eleven counties and cultivated by 425 pupils; last year there were 284

longing to the school trustees and teachers. On an average they measure 35 x 30 feet. A large number of domestic science schools, model schools, high schools (*academies*), colleges and convents have large gardens with a few bee-hives, and orchard, a poultry house and a school museum, etc. One may form an idea of our gardens by examining the one at the commercial college of the Sacred Heart, Ste. Anne de la Péraide. Every year through the Department of Agriculture seed grain and chemical fertilizers are sent



SCHOOL GARDEN OF THE COMMERCIAL COLLEGE OF STE. ANNE DE LA PÉRAIDE, QUEBEC.

school gardens, distributed in 54 counties and cultivated by 9,308 children gardeners. Next summer will witness a large increase in this number. They will also be better kept, under a closer supervision from our district representatives and school inspectors. The latter have taken special courses at the Oka Agricultural Institute during the 1914 vacation in order to learn the best methods of culture and each one of them gave a series of lectures on the teaching of agriculture in the school when visiting the schools.

The area of the school gardens depends upon the amount of land be-

longing to the school teacher and prizes are awarded to the children gardeners. Last year a thousand settings of eggs were distributed through the medium of the district representatives of the department and of Macdonald College.

The district school fair is the natural complement of the school garden. Such a fair was organized last year at St. Casimir, Portneuf County and met with great success. This success has convinced us of the necessity of improving agricultural instruction in all the schools of our province by means of school gardens and school fairs.

ONTARIO.

BY S. B. MCCREADY, B.S.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

SCHOOL GARDENING, NATURE STUDY
AND ELEMENTARY AGRICULTURE.

THERE is a good deal of confusion and misunderstanding concerning the relationship between School Gardening, Nature Study and Elementary Agriculture. In order to make headway in the proper direction it is very necessary that teachers and school inspectors should be clear in their minds in regard to these terms.

The meaning of School Gardening.—The word "school" in the expression "School Gardening" marks an important and fundamental distinction; it indicates that the chief purpose in bringing gardening into school work is *education* for the child. This should not be lost sight of. A garden at school may be quite a different thing from a school garden. It is not the location at school that makes it a school garden. A child's garden at home may be a real school garden and of the very best kind. A plant in a flower pot may be a child's garden. Caring for an apple tree may be school gardening. An experiment with field crops carried out by a high school pupil on his father's farm is school gardening. It is not location, nor size, nor crop, nor the age of the pupil that determines whether a garden is a school garden; it is the *purpose*. Primarily the aim is not to grow grains, flowers, or vegetables. The purpose is higher. It is to furnish incentives and provide a field for work that will be rich educationally in recreative, instructional and character-forming experiences.

The location of the pupils' plots has led to a differentiation expressed in the terms Home Gardens and School Gardens. From the pedagogic standpoint there is no essential difference in the meaning of the terms.

NATURE STUDY AND ELEMENTARY
AGRICULTURE.

In point of time there is a wide separation between these two subjects. Nature study was born into the educational world about the beginning of this century. Elementary Agriculture has been struggling for a place in Ontario schools since about 1845. Nature Study has re-shaped the elementary Agriculture by naturalizing it. As a school subject Nature Study has two sides to it; from the side of subject matter it includes all the natural objects of the farm and so includes most of the concerns of agriculture; from the side of teaching, it implies a natural way of learning about nature by individual observation and experiment. Nature study has brought a method of teaching and a method of study to the subject of Agriculture. It has destroyed its bookishness and replaced it with a *natural* or as it is called a *Nature Study* method of treatment.

A distinction in terms has arisen here also. While Nature Study in a large sense includes Agriculture, many teachers restrict it to studies of birds, trees, insects and flowers, studied apart from any special application to farming. And Elementary Agriculture has come to refer to studies of plants, animals and soils that have direct bearing on the work of the farm. In method of teaching the two are similar; in subject matter they may be treating of the same things; but in the *motive* they stand apart. Elementary Agriculture is *agriculturalized* Nature Study.

To present the chief features of the ideal school garden aimed at for Ontario rural schools, I cannot do better than quote from some of the Agricultural Education Bulletins and circular 13 which set forth the plans

of the Ontario Department of Education for instruction in Elementary Agriculture. It is needless to say that for towns and cities, such a garden would not be suitable.

AN IDEAL COUNTRY SCHOOL.

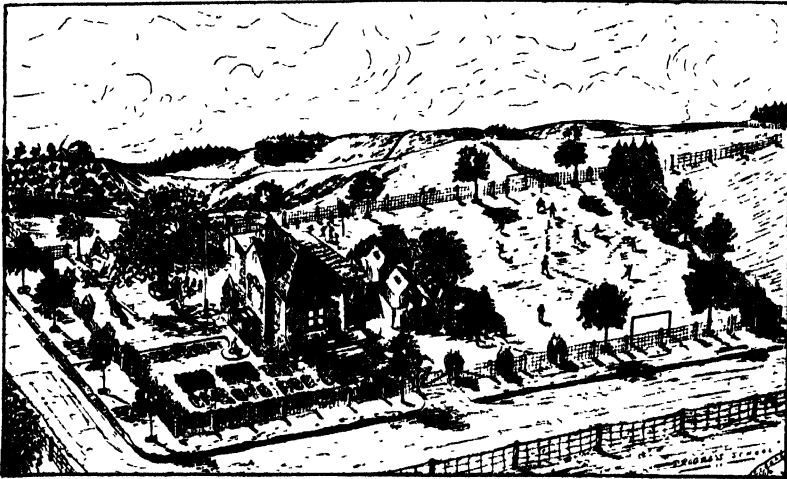
In the picture of the ideal one-teacher country school, one-half of the school grounds is represented as affording adequate playing room for the boys—baseball or football. At one side of the school house there is room for the older girls' tennis, croquet or basket ball. At one side of the front there are sand box, teeter and

which is much needed in many of the rural districts of Ontario.

THE SCHOOL GARDEN.

Form.—By many a proper school garden is considered to be a well arranged series of little plots with a more or less uniform assortment of flowers and vegetables grown by the pupils in the different classes. Such an arrangement undoubtedly may provide a good school garden and especially for the first year's effort.

Against such a plan, however, there are objections. It is not like an ordinary garden that may be found



AN IDEAL COUNTRY SCHOOL.

swing for the young children. At the corner of the school grounds nearest the corner of the roads the experimental plots are located. The flower beds, vines, boulevard and shrubs are set out and cared for as they might be at a well kept farm house. The teacher, pupils and community co-operate in making the school a home-like beauty spot for the neighbourhood. The playing facilities are for the young people too as well as for the pupils.

It is not to be inferred that the one-teacher school is considered preferable to the consolidated school

at the homes. It is not like a garden which the pupil will plan for himself when he grows up. It is difficult to lay out and manage. There is much waste of ground in paths and these require a great deal of attention. It cannot be carried out unless there is a larger or smaller open space in one plot. It does not appeal to practical farmers as being sensible. It is too narrow in its conception.

Location.—The school garden should not be located in an out-of-the-way place on the school grounds. If possible, it should be at the front or side of the school house and

within full view of passers-by on the road. If space cannot be taken from the school grounds for it, it may be carried on in nearby grounds or in a neighbour's field. Good work might be done in taking charge of the garden of some one living near the school as a loan or on a rental basis.

Equipment.—The amount of equipment for carrying on garden work at school is not specified. At some schools, all the work is carried on with tools brought from the pupils' homes. There are some advantages in this plan for the first year's effort.

mental plots in a school garden qualifying for grants is exclusive of paths. It is suggested that as a rule three square rods should be given to experiments or demonstrations on field crops, and three square rods devoted to experiments or demonstrations on vegetables, plant propagation, etc. The interests of the locality, however, will be the best guide in selecting experiments, and in some cases it may be considered best to give all the space to field crops, or, on the other hand, to vegetables.

The space devoted to flower-



S. S. NO. 1, SARNIA TOWNSHIP, LAMBTON COUNTY, ONT.

The garden at this school shows what is aimed at. A Township Educational Association was organized at this school.

For an average school six rakes, six hoes, one digging fork, one shovel, a pronged trowel, two watering cans, a wheel barrow, one mallet, a plentiful supply of garden lines and corner stakes, a hammer and saw will likely suffice. This outfit will cost about \$12.00. Grass shears, a sickle and a lawn mower will increase this amount by about \$6.00. At odd times a few extra tools may have to be borrowed.

The tools should be put under the charge of a tool officer or garden committee of the pupils.

Uses of area specified for school garden.—The six square rods specified as the minimum area for the experi-

growing can hardly be specified, as it will, be best to grow the flowers in beds or borders along the walks, around the experimental plots, or about the school house and fences. In a school of twenty-five pupils however, an area equal to at least one square rod should be given to flowers. For the smaller pupils, in either home or school garden work, small plots containing easily grown flowers or vegetables or both may well be encouraged. For the older pupils there are advantages in having the work done under conditions similar to those they will meet in actual life.

In the School Garden that should be aimed at for every Ontario school two features should be kept clearly in mind.

First: The garden should contain from year to year a few well planted and well conducted experiments and demonstrations on fruits, vegetables or field crops of interest and value to the whole neighbourhood. This part of the garden will constitute a small "experimental farm" for every school section, full of valuable lessons in agriculture.

In it the older pupils of the school, while being trained to "do something in order that they may learn something," will be trained also to co-operate for public service. The things they do will be for the benefit of all.

Secondly: The garden, *i.e.*, the school grounds, should contain neat grass plots, flower beds and borders for the purpose of training children to care for tidy surroundings, to grow flowers and also to make the school premises attractive as the local "beauty spot."

The garden work should be planned to develop a consistent and progressive series of studies from year to year, and not allowed to become a matter of aimless repetition; pupils should advance into more difficult work just as they do in arithmetic or other school studies. The interests of the locality should be considered in selecting the work. Teachers should leave records of the work they have carried out for the guidance of their successors, and as a permanent history of the teaching of agriculture in the school section.

A Community Garden.—The experiments and demonstrations that are carried out in the school garden should be made widely known throughout the neighbourhood. The pupils who are conducting the work should be led to think of their work as being for the benefit of the community as well as for themselves and their school. Surplus garden produce should not be wasted or selfishly

distributed; as a "community garden" everyone should share in its gifts. Plans for the garden work of the following season might be considered by the ratepayers at the annual school meeting. Trustees or other interested persons should be encouraged to conduct experiments in the school garden. Boys or girls who have left school might undertake some of the experiments also. In a school where there are only a few pupils in the senior classes, this plan will enable a teacher to secure help and experiments for the six square rods required.

Instead of having the pupils carry out the work in small separated plots, teachers are quite free to plan the garden along the lines of a farmer's home garden: *it is not the form or style of the garden that is of first consideration.* This plan does not prevent the pupils from making the work experimental. Everything done in the garden should have a *purpose*.

Flower growing.—The aim in the flower growing side of the garden work should be to make the school like a beautiful home. It will be best carried out in flower borders and beds suitably arranged alongside the walks or about the school house and fences, just as it might be at the pupil's home. Work in caring for the vines and shrubbery, the hanging baskets, the window boxes, the perennial border, the wild flower plot, the lawn, the paths, the roadside in front of the school may be all considered properly school garden work.

Care of grass plots.—In considering the care of a school lawn, *i.e.*, the grass plots, as part of the school garden work, it is not intended that the entire school grounds are to be kept by the pupils as a lawn, but rather that at the front of the school and around the flower beds and experimental plots, neat grass plots should be in evidence. School ground improvement schemes might be planned to cover a series of years, each year

adding an additional area to the improved area.

Summer Holiday care.—The summer holiday care of a school garden that is planned and conducted along proper educational lines must not degenerate into a caretaker's job. The school garden is for the education of children and indirectly for the people of the neighbourhood; if it has not meaning enough and educational purposes enough in it to secure voluntary good care from pupils and parents, it has no right to exist.

There may be some work in the garden not connected directly with the pupils' plots for which payment will have to be made. For such work arrangements should be made wherever possible with some of the pupils for a small allowance. A few dollars should cover all the expenses of caring for the garden during the holidays at any school.

In no case should pupils be paid to look after their own plots.

A School Progress Club.—The work carried out by the pupils in home gardens may be put largely under the management of the children themselves, organized as a *School Progress Club*. Under this scheme the Club may arrange for experiments for its members, undertake a large share of the inspection of the plots and carry out plans for papers and discussions on the work at the Friday afternoon meetings of the Club.

The teacher's chief office will be to encourage and direct the work.

The work carried out in the garden at school may be managed in this way also to the advantage of the work and the pupils.

The immediate commencement of the work is not to be desired so much as a favourable commencement. It is the continuance of the work and not the commencement that should be considered chiefly. It should not be undertaken without carefully planning. It is very desirable that the teacher undertaking the work should remain throughout the calendar year, and that he or she should have the active co-operation of the trustees. If a teacher who is leaving his or her school at summer holidays knows with some certainty that the trustees and ratepayers will endeavour to have the work continued under the new teacher, there may be justification in such cases for a commencement being made. Without such assurance, it will be better not to make a start.

Home Supervision of Gardens.—Teachers should arrange to see the pupils' work at least twice during the season. The visit to the pupils' homes will present opportunities for talking over matters with the parents on other matters besides agriculture. The chief values that will come from supervision will lie in the encouragement given the pupil and the prevention of carelessness.

MANITOBA.

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

FOR more than a generation school gardens have been compulsory in many European countries. They were introduced to give an impetus, an inspiration to improved scientific methods of horticulture and agriculture. The objects sought were largely economic,

namely, the introduction of more profitable methods in the cultivation of grains, vegetables, fruit and flowers.

In America, the school garden movement is rapidly gaining in popularity in the minds of all educators. The objects here are similar to those in Europe, but we have an

additional purpose of encouraging the bright, intelligent, ambitious boys to remain on the farm. The great rural school problem of Canada is:—"How shall we save the country boy from the allurements of the city and make him contented with life on the farm?"

Through the school garden the ambitious boy will see that successful farming requires as good an education and the exercise of his brains to as great an extent as any other occupation, in fact more than most. The boy will realize that rural life is the normal life—the best life—and that farming is the most aristocratic occupation in this great agricultural country.

Farming must become more intensive, scientific, and diversified, and it is from the rising generation, properly educated, that we must expect results.

From the communion with Nature associated with the gardens, children will learn to love the forests, streams, hills and glades, and be content to live there, nay more, will long to return should circumstances compel them to leave. Children will gain self-confidence, self-respect, and self-reliance from the realization that they actually own something that they themselves have actually produced. In the cultivation of a plot in the garden arises certain problems of soil, drainage, pests, rotation of crops, etc., on the one hand, but in addition the obeying of laws, the working together for a common end, the taking of failure and making success of it, and not least of all, the generous acknowledgement of each other's success.

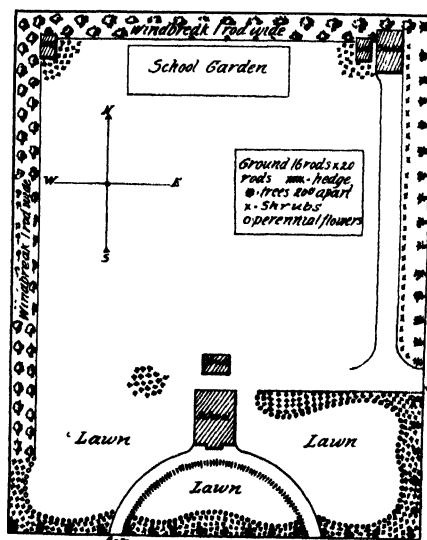
The children's gardens at school, properly kept, have been an inspiration for greater home improvement. No school activity will influence the home so effectively and permanently as that of school gardening.

WHAT SCHOOL GARDENING INCLUDES.

The nature and scope of gardening

possible in a school will largely depend upon conditions. In some schools, it may be difficult to go farther than indoor culture and window-boxes.

The above lay-out and improvement should be made a possibility at every school in city, town or country. The ground should be large enough to admit of developing equally the æsthetic, mental and physical nature of the child. The beautifying of the school grounds should receive first attention, especially as this appeals most readily to younger children.



TWO-ACRE SCHOOL GROUND PLANNED FOR SCHOOL GARDENING.

The fences and gates may require repair, the walk to be improved, the wood to be piled neatly, the ground to be levelled and cleaned off.

Shelter belts of trees should be planted on the north and west sides; a row of shade trees on the south and east; clumps of shrubbery in the corners, along the front and around outhouses. Hedges should be set, climbers planted, and perennial roots established around the borders of the lawn.

For the proper planting of all this permanent material, at least two years' thorough cultivation of the

ground is necessary. While this ground is being prepared, it may be utilized by the children in the growing of potatoes, corn, carrots, beets, etc., and there is no better means of preparation.

Then follows the planting of this permanent material and its subsequent care and cultivation, in which the children should always participate and perform all work of which they are capable. The borders, hedges and lawns will require a certain amount of care and cultivation continually, but an opportunity should be given the individual pupils, and this can be done best in experimental plots at the rear of the grounds.



A PERENNIAL BORDER ALONG THE SIDE
OF A RURAL SCHOOL GROUND

ESSENTIAL FEATURES IN BEGINNING.

1. A desire on the part of the teacher to do *something*.
2. A definite plan to follow towards a completed whole.
3. Start at the beginning, the bottom, so that later developments may be possible and successful.
4. Make each improvement a definite and permanent one, so that other teachers following may have something upon which to continue the work.
5. Keep the garden work at all times in as good condition as the best-kept note book of work inside.
6. Before leaving for vacation, make certain that the gardens will be properly cared for until school re-opens.

FEATURES TO AVOID IN BEGINNING.

1. Do not attempt too much, but do well.
2. Do not use too great variety in trees, shrubs, vegetables or flowers; use only varieties that are sure to succeed.
3. Do not be discouraged over failures, learning to turn present failures into future successes will be of great educational value.

BRITISH COLUMBIA.

BY J. W. GIBSON, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

THEORETICALLY there is a 'best' school garden for every school, a 'best' school garden for every district and no doubt a 'best' school garden for every teacher, but as yet few if any have seen it. So many factors enter into the organization and use of school gardens that it would be an utter impossibility to include all in any one school garden. Some teachers have attempted to include everything that they have ever heard of, thought of or read

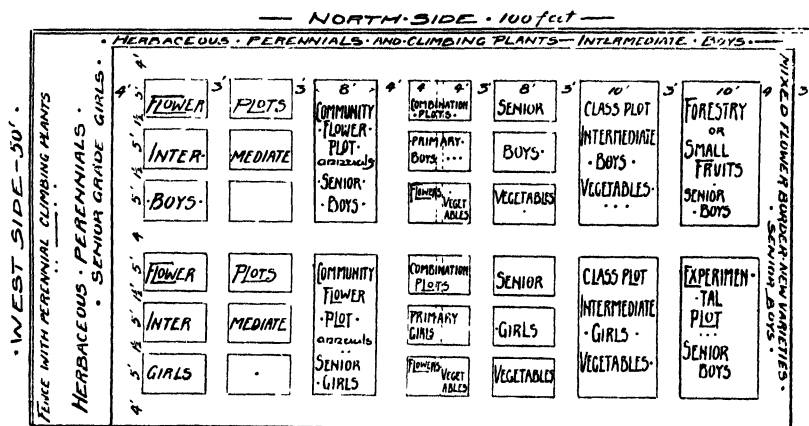
about in one school garden with the result that the very complexity of it made efficiency in management and use impossible. Such a garden must sooner or later become the cause of considerable worry on the part of both teachers and pupils which too frequently ends in apathy and neglect on the part of the pupils and distraction and discouragement on the part of the teacher. Some teachers who have not had any experience in school gardening and who have given

it no serious consideration at any time may perchance have seen or even heard of a garden established by some other teacher. Forthwith she determines to have a school garden and acquaints her pupils with her decision. Now it is doubtless worth while simply to "have a school garden" just as it is worth while for people who read very little to have a library, but a garden in the school grounds is far from being the ideal in school gardening.

We must shift the emphasis from the garden to the gardeners. Everything we undertake must have behind or beyond it a purpose. It must be done in the interests of the pupils

work of the school. Finally it will be the "best" garden for the teacher to have if by means of it she becomes more thoroughly acquainted with her pupils individually, is able to enter into their lives with more earnest sympathy and able to utilize this new interest to the advantage of the rest of the work of the school.

The use that is to be made of the garden in the teacher's scheme of education may be a determining factor with reference to size and location. If it is for the growing of flowers for decorative effect the garden may take the form of perennial and annual flower borders or plots so placed in the grounds as to look



Plan of School Garden for ungraded School of 30 to 40 pupils - Individual and Community Plots.

A SCHOOL GARDEN PLANNED BY J. W. GIBSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION FOR BRITISH COLUMBIA.

and of the community. It will be the "best" school garden if it gives boys and girls a new interest in the things of nature which environ them, if it creates within them a desire to investigate in order to understand and appreciate that environment, and finally if it increases their ability to control and to improve that part of nature with which they have to do. It will deserve the name of "best" if it leads boys and girls to take a greater interest in Agriculture as practised in their own home districts and if, on the other hand, it leads parents to take a new interest in the

best. This will not require a large area and might be established in any school ground however small. Such a scheme should be supplemented by window boxes for the growing of flowers. In this kind of gardening the teacher and pupils should consider such points as grouping and mass effects, colour schemes, time and duration of flowering, height, flowering or foliage habit and design. If the work is chiefly experimental as regards varieties and methods of cultivation it is best to make use of simple rectangular plots and straight rows all arranged in a simple garden

in a safe and convenient part of the grounds. These flower plots may be of two kinds—(1) individual plots and (2) community plots, the latter being four or five times as large as the former and operated by a group of children. Flower borders may also be operated as community plots in the school grounds. When the cultivation of vegetables is included as it should be in most school gardens, both individual and community ownership should be used. Individual plots for pupils in primary classes might be as small as 4 x 5 feet, or two pupils may be given a 5 x 8 foot plot together, in which case they invariably divide it into two, each claiming his part. In arranging plots for primary classes it is usually best to allow them to devote part of their plot to flowers and the rest to vegetables. All such combination plots should be grouped together in one section of the garden however. Flower plots look best when kept separate from the vegetable plots.

Class plots should be larger and used for the growing of larger crops such as corn, peas, potatoes, tomatoes, cabbage, etc. From two to six pupils may own and operate a class plot. These plots should be from 15 feet to 20 feet square. One rod square is sometimes desirable as it makes computation per acre very easy. These large plots may also be used as agricultural experimental plots, although all plots are in a sense experimental. It is not possible to include many such plots unless the area allotted to school gardening is fairly large. Of course community plots may be used in any grade and for either boys or girls whereas the large plots for agricultural experimentation are most suitable for boys of senior grade.

In fruit growing districts it is desirable to have a small plantation of bush fruits. Fruit trees require so much room that they cannot be included in most school grounds in orchard arrangement, but it is desirable that a few trees be included in

some part of the grounds outside the garden proper.

A small area should be spared in every school garden for growing trees from seed. This little tree nursery may not be larger than 10 feet square but will serve to interest boys and girls in the great work of tree growing and transplanting. This small beginning may lead to a more intelligent interest on the part of the pupils in the science of Forestry and in most cases the trees grown can be used to advantage for planting either in the school grounds or at the homes of the children.

Herbaceous perennials should be grown in every school garden or in the school grounds for ornamental purposes. Vines, both annual and perennial, should also be grown in suitable places in the grounds for ornamentation or for screening out-buildings, ugly fences or rock piles.

We have now alluded to most of the essentials both as to the purposes or educational value of the school garden and as to the make up of the garden itself. An important question still remains, viz., how many of those features already mentioned might reasonably be included in one garden? It is not possible to make a plan which would suit more than one set of conditions and say that even that was a "Model Garden." City schools and city grounds present many problems that do not arise in connection with country schools. Graded schools will require gardens somewhat different from those of ungraded schools. Of the two, the latter usually presents the greater difficulty. The plan submitted is for an ungraded rural school of from 30 to 40 pupils. The writer makes no claim that this is a "model" school garden even within the limits of the conditions stated but he has found everything suggested therein not only entirely practicable but also quite successful even according to those standards of success which were mentioned at the commencement of this article.

PART IV.

Special Contributions, Reports of Agricultural Organizations, Notes and Publications.

PATRIOTISM AND PRODUCTION.

A leaflet advertising Agricultural Conferences in Northumberland County, Ontario, shows in colours, on the front page, a facsimile of the "Scrap of Paper" which bears the signatures of the officials who signed the treaty. Following is the printing on the front and back pages of the leaflet:

FRONT PAGE.

THE "SCRAP OF PAPER"— BRITAIN'S BOND.

"Belgium.....shall form an independent and perpetually neutral State. It shall be bound to observe such neutrality towards all other States."

(FAC-SIMILE OF SIGNATURES AND
SEALS.)

Signatures attached to Treaty of

1839 guaranteeing the independence and neutrality of Belgium.

GREAT BRITAIN,	Palmerston.
BELGIUM,	Sylvain Van de Weyer.
AUSTRIA,	Senfft.
FRANCE,	H. Sebastiani.
PRUSSIA,	Bulow.
RUSSIA,	Pozzo Di Borgo.

BACK PAGE.

THIS MEANS YOU.

Do YOU Know:

- (1) That CANADA is at War?
- (2) That EVERYONE in Canada has a DUTY?
- (3) That BRITAIN and her ALLIES need FOOD?
- (4) That the FOOD AVAILABLE for those fighting in the trenches depends upon the production of YOUR farm?

GROWING FOOD ON VACANT LOTS.

IN the February number of THE AGRICULTURAL GAZETTE, there was published, on page 183, a brief article describing the steps taken in the city of Regina towards utilizing the vacant lots of the city for the production of garden crops. Similar comprehensive schemes, as are being worked out in other cities, are outlined in the following letters:—

WM. FOREMAN, CHAIRMAN CONSERVATION COMMITTEE, CHATHAM, ONT.

From the standpoint of Civic Beautification, rather than economic or increased production, we have endeavoured to interest organizations such as the Boy Scouts, Girl Guides and school classes, in the cultivation of vacant lots, but without success.

The City has some vacant lots on its hands that were offered for sale for taxes.

These have been cultivated by people who have had the use of the lots for the cultivating of them.

S. H. KENT, CITY CLERK, HAMILTON, ONTARIO.

We have formed in this City a Garden Club, having for its object the cultivation of vacant lots. The Club is managed by a committee composed of the Mayor, City Clerk, two members of the Council and three citizens. We propose to secure for those citizens so desiring, the free use of lots. The committee will have the lots prepared for planting. The members of the Club will pay \$1.50 which will pay the expenses of preparation of land. The members will be required to purchase their own seed, the seed to be selected by the Committee of Management.

I append herewith the rules governing the Club membership.

Each member shall accept and diligently cultivate such portion of land as may be allotted to him by the Committee of Management.

Each member shall plant such vegetables or seeds only as the Committee of Management shall deem best adapted to the character of the soil allotted to the member. The member shall be entitled to have for his own use the full yield of the land allotted to him without any deduction whatever.

Should any member, in the opinion of the Committee of Management, neglect to properly plant, cultivate and care for the parcel of land allotted to him, he shall immediately forfeit all right to the use of such land without recompense for any work done or any money expended thereon.

The Committee of Management shall be under no liability for any damage or loss sustained by any member of the club, and shall be under no obligation to allot lands other than such as may be voluntarily placed at its disposal for the purposes of the Club.

H. BROWN, CITY CLERK, BRANDON, MANITOBA.

The question of utilizing the vacant lots in the city of Brandon, for the growing of garden crops, during the coming year, has been partially discussed, both by the Brandon City Council, and the Brandon Horticultural Society. The latter Society will, in the near future, request the Council to use the City teams for the breaking up of the various properties, which may be turned over to us for the season, and it is proposed that the Society shall adopt regulations, and maintain a general supervision of the work.

ALEXANDER CALHOUN, CHAIRMAN
VACANT LOTS GARDEN CLUB, CALGARY,
ALBERTA.

A Vacant Lots Garden Club was formed in Calgary a year ago. In the season of 1914, 250 twenty-five foot city lots were cultivated by 174 gardeners who paid \$1.00 per lot cultivation charges. The land was furnished free by the owners. Marked success attended the movement and probably \$5,000 worth of produce was grown, though this is a very conservative estimate.

We are planning for much larger things in 1915 and shall probably have, at least, four times as much under cultivation. The fees have been raised to \$1.50 per lot. We aim to cover the cost of cultivation.

The city is looking after this through its Parks Department and is ready to meet a proportion of the office and administrative expenses.

We are also confronted this year with the necessity of cultivating lots and furnishing free seed for people who are not in a position to pay. We hope to collect the money by harvest time or accept payment in kind.

R. S. MCKENZIE, SECRETARY PROPERTY OWNERS' ASSOCIATION, EDMONTON, ALBERTA.

The Edmonton Property Owners' Association have decided to give the use of their vacant property free for the year 1915 to anyone who wishes to use same for gardening purposes. So far we have allotted over two hundred lots, besides several acreage pieces. The members of our association have given me for allotment some three hundred and twenty-five lots so far, and I expect that I will have many more as our membership is growing very rapidly.

HERBERT CUTHBERT, INDUSTRIAL AND PUBLICITY COMMISSIONER, VICTORIA, B.C.

The Victoria and Island Development Association inaugurated a movement some three or four months ago, with the object of supplying vacant lots to those who were unemployed or to others who wished to utilize them for the purpose of cultivating to raise vegetables for themselves, their families and friends.

A bill was issued in an endeavour to create an interest in this movement. It was not so successful as we anticipated at the start, but at the same time it was instrumental in inducing quite a number of people, even apart from this Association, to make their own arrangements with owners of vacant lots for this purpose. Others have taken advantage of our offer

to assist them and we have procured for them quite a number of vacant lots, which they are now engaged in cultivating.

This Association, about the same time, inaugurated a Public Market, to afford facilities for these people and those who are cultivating small patches of land around the City, to dispose of their produce. I am glad to say that this has been a great success. The market has become an established institution and has proved of the greatest benefit to the class of people for whom it was established. The result is that even apart from the vacant lot movement, the small producers have been able to find an outlet for their produce, poultry, pork, lamb, veal, fruits and flowers, for which they have been able to get ready cash. The result is that most of them will put into cultivation from twice to three times the amount of land they worked last year. We believe that we have started something which will be of the greatest possible importance to the city and district as a whole in future years.

We are now taking up with the Honourable, the Minister of Agriculture in Ottawa, several other matters of an agricultural nature, such as the importation of Angora Goats to Vancouver Island, the encouragement of the growing of flower and vegetable seeds, which we hope will also add very greatly to the area of land cultivated and to the increase of agricultural products.

The following competition is being conducted by the Victoria and Island Development Association:-

In order to encourage those who are now out of work and others, to take up vacant city lots and to cultivate them for the purpose of raising more vegetables for their own use and public consumption, the Victoria and Island Development Association offers to cultivators of vacant lots in the city of Victoria eleven prizes for the best cultivated lots, as follows:—1st prize, \$40; 2nd prize, \$30; 3rd prize, \$20; 4th prize, \$15; six prizes at \$10 each, one prize at \$5; while the Department of Agriculture of the Provincial Government offers \$100 in special prizes.

RULES OF COMPETITION GOVERNING THE AWARDING OF THE GENERAL PRIZES.

1. The competition will be open to amateurs only.

2. Any resident upon taking up a vacant lot and registering with the Victoria and Island Development Association as a competitor, may enter the competition.

3. The Association will place such lots as are now listed with them for this purpose, at the disposal of the applicants, and if these are not suitable will endeavour to secure such other lot or lots as competitors may desire.

4. There must be at least 25 entries on the first day of January, 1915, to insure the full complement of prizes being given, otherwise the number may be reduced in proportion to the number of competitors.

5. The gardens shall not be smaller than 4,000 square feet.

6. The Association will secure the plowing of competitors' lots at a charge not to exceed \$2.00, if sufficient entries are received to make this possible.

7. The Association will endeavour to arrange for general instructions to competitors to be given at meetings held for the purpose. Circular No. 4, of the Department of Agriculture, on "Gardening on a City Lot," may be had free on application.

8. Judging will be done at three suitable times during the season, by judges secured by the Association. The following score of points shall be used:—

Arrangement and laying out	15
Cultivation: Preparation of soil, fertilizers, cultivation	20
Cleanliness: Weeds, insects, diseases, blemishes	10
Attractiveness: To include flowers...	15
Industry, enterprise, skill, etc	20
Product-range of season, and variety, quality and quantity	20
Total	100

9. The score of any competitor not using skilled help will be increased 10 per cent. The score of gardens in the first year of cultivation, from sod or cleared, will be increased 10 per cent.

The following special prizes will be awarded by the Department of Agriculture of the Provincial Government: For the most attractive lot from the standpoint of civic improvement: 1st, \$16; 2nd, \$14; 3rd, \$10. For most productive lot, value of products to be considered and owner to keep accurate record of dates of harvesting and market prices, the lots to be scored on this basis at time of judging: 1st, \$25; 2nd, \$20; 3rd, \$15.

SEED IMPROVEMENT IN PRINCE EDWARD ISLAND.*

BY J. A. CLARK, B.S.A., SUPERINTENDENT CHARLOTTETOWN EXPERIMENT STATION.

CLIMATIC conditions that are favourable to the full development of a plant are conducive to the rapid improvement of that plant and Prince Edward Island seems to be particularly adapted for developing first quality seed grain. Under such conditions the simple method of mass selection from a seed plot has resulted in quickly improving varieties. Mass selection is the picking of heads which the grower considers are on the best plants in his field, and using the seed from them as parents for future crops. This method is quite an improvement over the fanning mill selection. Another method starts with the individual mother plant which may be obtained by the individual selection of one plant out of thousands or by careful plant breeding and selection. The seed from the individual mother plant is then multiplied and distributed. This method, being difficult and expensive, has been carried on by the Cerealists and Cereal Husbandmen at the Experimental Farms and Stations, and at the Agricultural Colleges throughout Canada and the United States. By this method some of the difficulties in the way of further improvement by mass selection were overcome.

WHERE TO OBTAIN FOUNDATION STOCK.

It is an interesting fact that almost all of the foundation stock of the seed grown by the members of the Canadian Seed Growers' Association in Prince Edward Island was obtained either directly or indirectly from the Central Experimental Farm at Ottawa. Foundation stock of oats in 4 lb. lots can be obtained free from the Central Experimental Farm on application, or it can be purchased in larger quantities from the multiplying plots at any of the Experimental Stations.

VARIETIES.

The Experimental Station tests many varieties of cereals. It is the place for such tests. I think it a good place also for the growers to send samples of their grain for comparison and examination. We are prepared to give all the help we can to the growers of pure seed. If they could visit the Station when grain was ripening, many valuable lessons regarding varieties could be learned at that time about the habits of the different sorts and strains. I believe it is in the interests of seed improvement that the numbers of varieties grown generally be reduced and that seed centres be organized where only one variety is grown in a locality.

OATS.

A variety rarely stands at the head of the list more than one year, yet certain varieties are leaders. At the present time at the Charlottetown Station, Victory (a Swedish oat) is a leader, Banner, Gold Rain, Lincoln, Old Island Black and Ligowo follow it closely. Co-operative work was undertaken in the spring of 1912 by the Superintendent of the Charlottetown Station, the seed inspector and a number of careful farmers in Kings and Queens counties to determine which of the three leading types of oats were best suited to certain localities. Banner, Ligowo and Old Island Black were the varieties chosen. Each variety was sown in duplicate each year on a number of different farms. Equal portions of the best seed obtainable of the different varieties were sent out by the Charlottetown Experimental Station each spring. The product was returned in the autumn when it was threshed by the station staff at Charlottetown with one exception. On one occasion the superintendent was present at the threshing and weighing of the plots on one farm. The results of three years observations are here given:

Variety.	Banner.		Old Island Black.		Ligowo.	
	Bus.	Lb.	Bus.	Lb.	Bus.	Lb.
Average yield per acre from 12 plots of each variety in 1912.....	55	24	49	6½	46	27½
Average yield per acre from 8 plots of each variety in 1913.....	66	31	62	12	58	22
Average yield per acre from 6 plots of each variety in 1914.....	70	28	58	11	56	20
Grand average yield per acre from 26 plots of each variety, 1912-14.....	62	21 2/3	55	12	52	24½

*Summary of paper read before Nova Scotia Seed Growers' Association, January, 1915.

From the foregoing data it will be seen that Banner has each year proved to be more productive than the oats representing the two other types tested and during the three seasons it has produced on an average 7 bushels and 10 pounds per acre more grain than Old Island Black, and 9 bushels and 31 pounds more grain per acre than Ligowo. It was generally believed that Ligowo was better suited to most of the localities than Banner before the co-operative work began. Banner oats has never led the list any year at the Charlottetown Station but it has always been well up in the list. This oat is popular and is highly recommended both on account of its good qualities and because of the demand for it for seed purposes on Prince Edward Island and in the neighbouring provinces. Old Island Black is a variety that has been developed in the province. It has a thinner hull than Banner. It is probably due to the excellent qualities of this oat that black oats still continue to bring 2c. more per bushel than white in most of the Maritime markets. Its chief failing is the weakness of its straw as it is likely to lodge badly on rich land.

SPRING WHEAT.

Chelsea, which has rather poor milling qualities, has twice led the list of spring wheat. Early Red Fife, Stanley, Marquis, White Russian are leading at this Station. Marquis has been tested on farms in many sections and has everywhere made good.

BARLEY.

Old Island Two-rowed (English Chevalier) has led for two years at Charlottetown over all sorts. It has several favourable characters one being that it drops most of its awns in the field. This year three Swedish barleys were next in yield, namely: Gold, Hannchen and Swedish Chevalier, the average yield of these being over 75 bushels per acre. Gold is a very promising two-rowed variety.

PEAS.

Solo, Arthur and Golden Vine are the varieties that we are now growing. The Arthur is a large white pea and is highly recommended.

CLOVERS AND GRASS SEEDS.

There is a great field for individual work in improving timothy, the grasses,

clover and alfalfa seed which in the past have been much neglected. It was thought that timothy was just timothy. Now we know that there have already been many strains selected out of the common sort and there are great possibilities in the improvement of this sort. We will begin to make real headway in the growing of alfalfa as soon as we begin raising our own seed.

FARM OPERATIONS IN THE PRODUCTION OF SEED.

A good site should be chosen for the seed plot and multiplying field. It is well to have the manure applied the previous year on roots. The ground should be brought to a good tilth by thorough cultivation as early in the season as possible. The seed grain after being treated with formalin should be sown as soon as it will feed right in the seeder or drill, allowance being made for the swelling of the grain by the fungicide.

Seed grain should be rogued and all noxious weeds and foreign grain removed from the standing crop. It should be allowed to ripen well before cutting and should be dry as shot before being stored in the barn. Great care should be taken in threshing, cleaning and storing so as to avoid impurities. This is much easier done if only one variety of each grain is grown and fed on the farm.

TO SUM UP.

Seed grain of the very first quality is being produced in Prince Edward Island. By improved farm methods and selection of seed oats the average yield per acre for the whole province has been doubled in 24 years. By thorough, clean cultivation and the use of only first quality seed of the very best sorts the yield can be greatly increased throughout the Province. An indication of the possibilities of oat culture was shown by the average yield of the 10 best plots at the Experimental Station at Charlottetown in 1914, which was at the rate of 116 bushels and 29 pounds per acre. There is an ever increasing demand in Nova Scotia, New Brunswick, Quebec and Ontario for the very best seed oats we can produce. By the methods suggested we can maintain our stock as at present or increase it and still have sufficient to yield a large income from the surplus sent to the other provinces for seed purposes.

COTTON VERSUS GLASS.

UNDER the heading "Growing Food on Vacant Lots," on page 183 of THE AGRICULTURAL GAZETTE for February the following statement appears: "We have decided to recommend all our gardeners who use hotbeds and coldframes to eschew glass and to use factory cotton instead. It costs less, does not grow so hot during the day nor so cool at night. The plants get more air and are in every way hardier and stand transplanting better," This has brought forth much discussion and the following expressions of opinion from a number of recognized authorities:

W. T. MACOUN, DOMINION HORTICULTURIST, CENTRAL EXPERIMENTAL FARM, OTTAWA.

Cotton is quite satisfactory to use instead of glass for hot beds and cold frame sashes in late spring when frosts are not severe, but for the early part of the season, when hot beds are started and even a little later on, in parts of the country where there is liable to be sudden severe frosts, I should not recommend the use of cotton. It is used considerably in the south eastern states, but for the Prairie Provinces it should be used with caution. Of course, if additional protection is given at night, by use of sacking or matched lumber protectors, it would be quite safe. As far as the plants growing under cotton is concerned, they do very well indeed.

F. W. BRODERICK, B.S.A., PROFESSOR OF HORTICULTURE, MANITOBA AGRICULTURAL COLLEGE.

Our experience in using cotton instead of glass on hot beds and cold frames does not agree with that of the writer from Regina.

I would say in the handling of hot beds and cold frames that the use of glass is essentially very practicable up to the middle of May, and although we use factory cotton to a considerable extent on the cold frames, it is only for the purpose of hardening plants over for a week or two before planting out.

In our western climate the night temperature is so much lower than the day temperature that the cotton does not provide sufficient protection for the most

tender plants which are growing in beds of this kind. I would say the only use to which cotton can be put is for a short period just before the time for planting out, which in this country is around the first of June.

T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE, MACDONALD COLLEGE, QUE.

We have used factory cotton for covering hot beds and cold frames and in its place it is quite satisfactory, but does not by any means take the place of glass, and I am of the opinion that the claims made for it in the article on page 183 of the February number of THE GAZETTE are too great. Cotton is used towards the end of the hot-bed and cold frame season when the weather is not too severe, and protects plants from the cold winds and the lighter frosts, etc., and it is often used in "hardening off" plants preparatory to setting them out in the field. During the daytime cotton would not be satisfactory for some crops such as Melons, Tomatoes and Radish, as it would give too much shade and as the cloth became dirty from dust and smoke, it would increase the shade considerably. Cotton has a place in gardening, but cannot replace glass entirely, except in the milder weather when only moderate protection is required.

It is just possible that the writer of the article used the cotton late in the season after the colder weather has passed, and under those conditions may have had success with it. We start our first hot beds as early as March 10th, some others start them earlier than this, and at that date cotton would not adequately protect the plants.

We have also used a heavy grade of "waxed" paper in place of glass, and although cheaper in its first cost it cannot replace glass as far as satisfaction is concerned and, of course, it is not nearly as permanent as the glass sash.

J. E. BRITTON, B.S.A., DEMONSTRATOR IN VEGETABLE GARDENING, ONTARIO AGRICULTURAL COLLEGE.

The main purpose of a hot bed is to keep a high and uniform temperature for the young growing plants. Plants such as tomatoes, peppers, melons, etc., require a temperature of 60° to 70°, while lettuce, cabbage, etc., will do best at 50° to 60°. In starting plants early while the weather is still cold, the heat is produced partly by the fermenting manure and partly received through the glass of the hot bed.

Sometimes double glass frames are used in order to keep a higher and more uniform temperature. However, the use of these double glass frames is not general with the commercial growers. Later in the spring and before setting the plants in the garden, we always harden them off in cold frames constructed practically the same as hot beds, but without the heating manure. These we cover with factory cotton tacked to large frames, which are removed during the day time. We have never practised rolling the cotton over the edge, but know it is found to be a very handy and successful method for covering the plants.

The method outlined in the article in the February GAZETTE would be more economical than using glass and should be just as satisfactory if not more so for growing plants late in the spring or in the early summer, but it would not be satisfactory for the very early plants. I can understand it being a very satisfactory practice in the West, where it is impossible to set plants out of doors at such an early date, and therefore it is necessary to grow them under protection until all danger of frost is passed.

JAMES ALLAN, SUPERINTENDENT HORTICULTURAL DEPARTMENT, AGRICULTURAL COLLEGE, TRURO, N.S.

Up to the present time, I have not used cotton goods for frame protection. Last spring we purchased some patent plant protection cloth, but unfortunately it arrived too late.

I have had an idea of putting this on to individual frames to take the place of sashes, but I do not believe that this is as good a plan as to tack the cloth to the upper side of the frame and use the roller at the lower end. In this part of the province we have exceedingly high winds, and in order to give this cloth a fair trial it would be necessary to have a well protected frame-yard, which I am in hopes of having this spring.

I have used this cotton cloth in the New England states, and have found it very satisfactory, and I believe that they use it very extensively in the truck-growing sections of Virginia. Of course the climate is entirely different from what it is here.

NOEL PELLETIER, DIRECTOR SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCAITIÈRE.

We have not tried to replace glass by cotton; however, we have made use of both. In the first place, I would say that all our hot beds are covered with glazed sashes.

We have used cotton to protect our plants in very cold nights. We used to put the cotton under the glass.

We also used cotton to protect the plants when the sun is very strong, when the sashes were removed, but in case of a heavy rain we used to put back the glazed sashes as I do not think cotton would protect the beds sufficiently in case of a heavy rainfall.

By following the above method, we have not had any trouble.

V. M. ATHANASE, OKA AGRICULTURAL INSTITUTE, LA TRAPPE, QUE.

The method described by Mr. Andrews of Regina, on page 183 of the February GAZETTE would not do for all cases. It may be useful for cold beds that are made at the end of April or the beginning of May, when the temperature has become sufficiently warm, but cotton will not afford sufficient protection against the cold for a hot bed that is made in March. It is necessary to make this distinction owing to the severity of our climate.

No one will deny that glass is cheaper than cotton. It is a fact also that it lets in more air, but it also lets in more cold. Three things are required for strong growth of plants: heat, light and air. Glass gives more light and more heat than any other substance. As to air, it is always easy to procure more by raising the sash, more or less.

The theory of Mr. Andrews would, in my opinion, be admissible only if cotton was a good conductor of heat and light. But it is quite the contrary. Cotton is often used to intercept both heat and light; it is important not to confuse hot beds with cold beds.

NORMAN M. ROSS, CHIEF OF TREE PLANTING DIVISION, FORESTRY BRANCH, INDIAN HEAD, SASK.

Under our conditions here I very much doubt whether hot-beds could be brought on successfully without the use of glass, at least in earlier stages. I have no doubt that the factory cotton would be all right for coldframes later in the season. There is always the difficulty, however, in this country of protecting frames from the heavy winds which we so frequently experience. I think that under the average conditions much difficulty would be experienced in handling cotton screens in general practice.

THE EASTERN ONTARIO PROVINCIAL SEED FAIR.

BY W. H. SMITH, B.S.A., DISTRICT REPRESENTATIVE, ATHENS, ONT.

THE first Eastern Ontario Provincial Seed Fair held at Brockville February 18th to 20th, 1915, was a decided success viewed from the point of number of entries and keenness of competition. While the attendance might have been larger, it was sufficient to justify the statement that this initial Fair at Brockville demonstrated conclusively that an essentially Seed Fair can be held, and that to really receive the benefit due them, it is necessary to have seed shown at a Seed Fair and not in conjunction with a live stock exhibition.

In the standing field crop competition there were 45 entries in the class for white oats, spring wheat had 6 entries, barley 3, peas 2, turnips 2, potatoes 3, dent corn 11, flint corn 5.

The general class was filled up well in all sections, the various classes of white oats having the greater number of entries, while 6-rowed barley and corn classes were also exceptionally well filled. There might have been a larger exhibit in the sections for Canadian Seed Growers grain, but what was there was of excellent quality.

At the auction sale of seeds held on Saturday prices were not exceptionally high. Fall wheat sold at \$3.50 for 2 bushel sack, spring wheat sold at from \$3 to \$4.25 per sack of 2 bushels, goose wheat \$4, banner oats ranged from \$1.90 to \$2.20 for 2 bushel sack, O.A.C. No. 72 oats sold as high as \$5 per sack, the average price being about \$3.25, white oats in the A.O.V. class sold at an average of \$4 per sack of 2 bushels, O.A.C. 21 barley sold as high as \$3.10 per sack an average of about \$3.80, field peas sold at \$4.20 per sack, and prize winning field beans sold at \$6 per sack, red clover at from \$13 to \$15 with timothy seed averaging about \$5, prize winning potatoes sold as high as \$2.10 per bag.

The lectures in the live stock judging tent on Friday were well attended, the large 40 x 60 tent being filled to its capacity. R. S. Stevenson of Ancaster conducted the classes in judging dairy cattle, while Prof. Geo. E. Day, of the Ontario Agricultural College, Guelph, demonstrated on classes of heavy draft horses. In the afternoon C. F. Bailey, Assistant Deputy Minister of

Agriculture for Ontario, took charge of the light horse class also conducted Friday afternoon. While the horse judging demonstrations were being conducted in the tent, Miss Gertrude Grey of Toronto conducted cooking demonstrations in Victoria Hall for the large number of farmers' wives who were in attendance.

In addition to the large amount of improved seed sold by auction at the sale of seed Saturday morning, the exhibitors showed to the farmers in attendance the advantage of good seed, and the contrast between properly prepared seed grain and poorly prepared seed grain.

Many of the people present had no idea that it was possible to grow such corn as was on exhibition at this Fair. The corn classes alone were an attraction to the farmers, while such men as A. S. Maynard of Chatham, Ed. Warwick, Blenheim, Alvin Oulette and Mr. Bigger of the Walker & Sons' Farm, J. O. Duke of Ruthven, by conversing with the farmers in attendance were able to convince them of the error of their way to almost as great an extent as did J. W. Noble with his exhibit from the Corn Growers' Association. Among other features of Mr. Noble's exhibit, were ears of the white standardized varieties, and a model of a specially prepared drying house similar to those used by the Growers in preparing their specially kiln dried seed corn. Another great feature of the Show was a miniature representation of Walker & Sons' large farm, and the egg marketing demonstration established by the Ottawa Department of Live Stock under the charge of Mr. Fee was of considerable interest to the majority of farmers and their wives. The wool exhibit from the Department of Agriculture, Ottawa, under the charge of Mr. Bent, attracted considerable attention.

The officers for the year 1915 were elected as follows:—

Honorary President—Mayor Donaldson, Brockville.

President—W. T. Hands, Perth.

Vice-President—George Bradley, Carleton Place.

Secretary-Treasurer—Walter H. Smith, Athens.

WEED ACT OF ONTARIO.

A committee consisting of J. E. Howitt, Professor of Botany, Ontario Agricultural College, Guelph, Hon. Nelson Mon-

teith and Mr. W. J. Lennox, was appointed in 1914 by the Ontario Agricultural and Experimental Union to make a study of the present Weed

Acts of the different provinces of Canada. This committee has proposed the following suggestions as to how the present Ontario Weed Act to prevent the spread of noxious weeds, might be made more effective.

1. By an organized effort upon the part of the Ontario Department of Agriculture, through the agency of farmers' clubs, farmers' institutes and the district representatives of the Department of Agriculture, to make the farmers of Ontario acquainted with the provisions and regulations of the Ontario Act to Prevent the Spread of Noxious Weeds.

2. By amending the present Act so as to make it compulsory for every township council to appoint an inspector whose duty it shall be to see that the provisions of the Act relating to the destruction of weeds are carried out.

3. By the Ontario Government appointing county or district inspectors who shall supervise the work of the township inspectors, and report to the Government any neglect of duty upon the part of the said inspectors.

4. By extending the present Act so as to

prevent the following weeds maturing and ripening their seeds:

1. Wild Oats (*Avena fatua*).
2. Curled Dock (*Rumex crispus*).
3. Clustered Dock (*Rumex conglomeratus*).
4. Purple Cockle (*Agrostemma githago*).
5. False Flax (*Camelina sativa*).
6. Wild Mustard (*Brassica arvensis*).
7. Wild Carrot (*Daucus carota*).
8. Field Bindweed (*Convolvulus arvensis*).
9. Ribgrass (*Plantago lanceolata*).
10. Common Ragweed (*Ambrosia artemisiifolia*).
11. Ox-eye Daisy (*Chrysanthemum leucanthemum*).
12. Canada Thistle (*Cirsium arvense*).
13. Chicory (*Cichorium intybus*).
14. Perennial or Field Sow Thistle (*Sonchus arvensis*).
15. Burdock (*Arctium minus*).
16. Wild Barley or Squirrel-tail (*Hordeum jubatum*), and all other weeds which upon the consent of the Minister of Agriculture, the council of any city, town, township or village may by by-law bring under the operation of this Act.

FOOD OR FEVER.

In the article on "Italy" in *The Agricultural War-Book*, page 39, this statement occurs: "The Campagna is being redeemed after a thousand years of noxious existence." The following is a review by *The London Lancet* of an article by Mr. L. Villari in *The Edinburgh Review*. There is something suggestive and instructive in it for Canadian agriculturists.

"The Campagna is a congeries of hummocks rising into hillocks, intersected by *fossæ* [ditches] either stagnant or dribbling their way into the Tiber. How is it that this should be the true description of an expanse of soil which was once famed for vegetative energy, and which, in response to cultivation, was covered with patrician residences and surrounded with gardens? How is it that a tract of country once a favoured health-resort should have degenerated into a fever preserve? Views of the origin of one of the most characteristic phases of the Campagna, its unhealthiness from 'malaria,' are gaining ground which imply that insect life, in some of its most pernicious developments, is not the *causa causans* of the 'malaria'

in question, but is itself a symptom of a deeper pathological coefficient without which the said insect life would cease to exist. Left derelict, or deprived of its proper treatment, the soil avenges itself by an unerring retribution. Wherever cultivation has done justice to the soil, the insect disappears, and with it the 'malarious' infection. To this Mr. Villari bears emphatic testimony, showing how the reclamation now in progress under Government is, precisely in those localities where it has been thoroughly practised, the prelude to the extinction of the insect (deprived of its pabulum), and, coincidently with this, the disappearance of the 'malaria' and of the fever it induces. In other localities the State provision of quinin and wire gauze in the dwellings have had most salutary uses—the notable reduction of sickness. The appropriate utilization of the vegetative energy by scientific agriculture—in a word, the restoration of the Campagna to the salubrity and the amenity it enjoyed under the Antonines—such is the prospect to which Mr. Villari invites us."

SOCIETIES AND ASSOCIATIONS.

THE annual meetings of the various live stock and record associations with headquarters in Ontario were held in Toronto during the week beginning February 1st, 1915. The following are the officers of the associations for the year 1915:—

DOMINION SHORTHORN CATTLE BREEDERS' ASSOCIATION.

President, J. M. Gardhouse, Weston; first vice-president, W. A. Dryden, Brooklyn; second vice-president, J. F. Mitchell, Burlington; secretary-treasurer, H. M. Pettit, Freeman.

DOMINION CATTLE BREEDERS ASSOCIATION.

President, John Gardhouse, Weston; secretary, R. W. Wade, Toronto.

DOMINION SWINE BREEDERS' ASSOCIATION.

President, J. D. Brien, Ridgetown; vice-president, J. C. Stuart, Ottawa; secretary, R. W. Wade, Toronto.

DOMINION SHEEP BREEDERS ASSOCIATION.

President, Col. R. McEwen, Byron, Ont.; vice-president, J. Bryson, Brysonville, Ont.; secretary, R. W. Wade, Toronto.

CLYDESDALE HORSE ASSOCIATION OF CANADA.

President, John A. Boag, Queensville, Ont.; vice-president, William Graham, Claremont, Ont.; secretary, J. W. Wheaton, Toronto.

ONTARIO HORSE BREEDERS' ASSOCIATION.

President, W. Smith, M.P., Columbus, Ont.; vice-president, John A. Boag, Queensville; secretary, R. W. Wade, Toronto.

SHIRE HORSE BREEDERS' ASSOCIATION.

President, C. E. Porter, Appleby; vice-president, Amos Agar, Nashville; secretary, G. de W. Green, Toronto.

STANDARD BRED HORSE ASSOCIATION.

President, W. J. Cowan, Cannington, Ont.; vice-president, J. S. McCall, St. Thomas, Ont.; secretary-treasurer, J. W. Brant, Ottawa, Ont.

CANADIAN THOROUGHBRED HORSE SOCIETY.

President, Lieut.-Col. Hendrie, Hamilton; first vice-president, J. J. Dixon, Toronto; second vice-president, A. E. Dymont, Toronto; secretary-treasurer, T. J. McCabe, Toronto.

CANADIAN HACKNEY HORSE SOCIETY.

President, A. E. Yeager, Simcoe; vice-president, Harry Boag, Barrie; secretary, H. M. Robinson, Toronto.

CANADIAN PONY SOCIETY.

Honorary president, C. Lovejoy, Mimico; president, W. J. Langdon, Toronto; first vice-president, J. M. Gardhouse, Weston; second vice-president, Dr. Watson, Hudson Heights, Que.; secretary, G. de W. Green, Toronto.

HEREFORD CATTLE BREEDERS' ASSOCIATION.

President, L. O. Clifford, Oshawa, Ont.; vice-president, W. H. Hunter, Orangeville; secretary-treasurer, John W. Brant, Ottawa.

JERSEY CATTLE CLUB.

President, S. J. Lyons, Norval; first vice-president, D. O. Bull, Brampton; second vice-president, F. L. Green, Greenwood; secretary-treasurer, B. A. Bull, Brampton.

ONTARIO SHEEP BREEDERS' ASSOCIATION.

President, J. T. Gibson, Denfield; vice-president, J. W. Springsted, Abbingdon; secretary, R. W. Wade, Parliament Buildings, Toronto.

ONTARIO SWINE BREEDERS' ASSOCIATION.

President, Prof. Geo. E. Day, Guelph; vice-president, John I. Flatt, Hamilton; secretary, R. W. Wade, Toronto.

BERKSHIRE SWINE BREEDERS' ASSOCIATION.

President, H. M. Vanderlip, Cainsville; vice-president, Adam Thompson, Stratford; secretary, R. W. Wade, Toronto.

YORKSHIRE BREEDERS' SOCIETY.

President, Ken. Featherston, Streetsville; vice-president, J. C. Stuart, Ottawa; secretary-treasurer, R. W. Wade, Toronto.

RECORD COMMITTEE.

Wm. Smith, M.P., Columbus, chairman; Peter White, K.C., Pembroke, Representing Heavy Horses; Wm. F. Stephen, Huntingdon, Que., Dairy Cattle; Robert Miller, Stouffville, Beef Cattle; R. R. Ness, Howick, Que., Light Horses; J. M. Gardhouse, Weston. Sheep; J. E. Brethour, Burford, Swine, and Jno. W. Brant, Ottawa, Secretary-Treasurer.

THE HOLSTEIN FRIESIAN ASSOCIATION OF CANADA.

The officers of the Holstein Friesian Association of Canada for 1915 are as follows:—

President, Mr. D. C. Flatt, Hamilton, Ont.; first vice-president, Mr. M. L. Haley, Springford, Ont.; second vice-president, Mr. J. W. Richardson, Caledonia, Ont.; third vice-president, Mr. N. Michener, Red Deer, Alta.; fourth vice-president, Mr. N. Sangster, Ormstown, Que.; secretary-treasurer, Mr. W. A. Clemons, St. George, Ont.

QUEBEC BRANCH.

The Quebec Branch of the Holstein Friesian Association of Canada, held its annual meeting at the Queen's Hotel, Montreal, on Tuesday, February 2nd, 1915.

The following members were elected officers for the ensuing year:—

Honorary Presidents, Hon. J. E. Caron, Minister of Agriculture, P.Q.; D. H. Brown Beith; J. E. K. Herrick, Abbotsford; L. de L. Harwood, M.D.; Vaudreuil, F. E. Came, St. Jean Baptiste de Rouville.

President, P. J. Salley, Lachine Rapids; first vice-president, Ogden Sweet, N. Sutton; second vice-president, Neil Sangster, Ormstown; third vice-president, Jos. Ferland, Sorel; fourth vice-president, R. A. Gillespie, Abbotsford.

ALBERTA BRANCH.

The Alberta Branch of the Holstein Friesian Association of Canada held its first annual meeting in Red Deer, Alberta, on December 29th, 1914. The following officers were elected for 1915:—

Honorary president, The Hon. Duncan Marshall, Minister of Agriculture; president, N. Michener, Red Deer, Alta.; first vice-president, Thos. Laycock, Calgary, Alta.; second vice-president, I. Bateman, Innisfail, Alta.; third vice-president, H. J. Smith, Clover Bar, Alta.; fourth vice-president, G. H. Hutton, Lacombe, Alta.

Secretary-treasurer, E. W. Bjorkeland, Red Deer, Alta.

THE BRITISH COLUMBIA STOCK BREEDERS' ASSOCIATION.

The ninth annual meeting of the British Columbia Stock Breeders' Association was held at Vancouver on January 26th, when the various reports of the year were given and the following officers were elected: Hon. president, Hon. T. W. Paterson; hon. vice-presidents, Mr. S. F. Tolmie and Mr. W. D. Scott; president, Mr. A. D. Patterson; vice-president, Mr. Sam Smith; secretary-treasurer, Prof. W. T. McDonald, Victoria; assistant secretary-treasurer, Mr. S. H. Hopkins.

THE BRITISH COLUMBIA DAIRYMENS' ASSOCIATION.

The following are the officers of the British Columbia Dairymen's Association for the year 1915: Hon. president, Mr. A. C. Wells, Sardis; president, Mr. William Duncan, Courtenay; vice-president, Mr. E. A. Wells, Sardis; secretary-treasurer, Mr. H. Rive, Victoria.

LIVE STOCK ASSOCIATIONS IN QUEBEC

The officers for 1915 of the General Stock Breeders' Association of the Province of Quebec and affiliated associations are as follows:—

Patrons, Honorable M. Burrell, Minister of Agriculture for Canada; Hon. J. E. Caron, Minister of Agriculture of the Province of Quebec. Honorary President, Mr. Robert Ness; president, Hon. N. Garneau, M.L.C., Quebec; first vice-president, Mr. Arsene Denis, St. Norbert Station; second vice-president, Mr. James Bryson, Brysonville; secretary, Dr. J. A. Couture, 49 Garden St., Quebec.

FRENCH CANADIAN CATTLE BREEDERS' ASSOCIATION.

President, Mr. Arsène Denis, St. Norbert Station (Berthier); vice-president, Mr. Géd. Garceau, Trois Rivières; secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

FRENCH CANADIAN HORSE BREEDERS' ASSOCIATION.

President, M. Joseph Deland, L'Adadie; vice-president, Victor Sylvestre, Clairvaux (Bagot); secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

NATIONAL SHEEP BREEDERS' ASSOCIATION.

President, Mr. Napoléon Lachapelle, St. Paul l'Ermite; vice-presidents, Messrs. James Bryson, Brysonville, Que., J. E. Dion, St. Sebastien; secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

THE UNITED FARMERS OF ALBERTA.

The officers of the United Farmers of Alberta for 1915 are as follows:—

Honorary president, D. W. Warner, Edmonton; president, James Speakman, Penhold; first vice-president, H. W. Wood, Carstairs; second vice-president, S. S. Dunham, Lethbridge; third vice-president, Rice Sheppard, Strathcona; fourth vice-president, W. D. Trego, Gleichen; secretary, P. P. Woodbridge, Calgary.

THE ONTARIO PLOWMEN'S ASSOCIATION.

The following are the officers elected at the annual meeting of the Ontario Plowmen's Association, held recently in Toronto:

Hon. President, Jas. Kilgour, Eglinton, past president, Jas. McLean, Richmond Hill; president, A. P. Pollard, Zion, 1st vice-pres., Wm. Doherty, Eglinton; 2nd vice-pres., L. W. Smith, Millbrook; secretary, J. Lockie Wilson, Toronto; treasurer, T. A. Patterson, Ellesmere.

THE ONTARIO FAIRS AND EXHIBITIONS' ASSOCIATION.

The fifteenth annual convention of the Ontario Association of Fairs and Exhibitions was recently held in Toronto. The following were the officers elected for the year 1915: President, J. C. Stuart, Osgoode; first vice-president, William Scarf, Durham; second vice-president, L. C. J. Bull, Brampton; secretary and editor, J. Lockie Wilson, Toronto; treasurer, Alex. McFarlane, Otterville.

NOVA SCOTIA FARMERS' ASSOCIATION.

The nineteenth annual convention of the Nova Scotia Farmers' Association was held at Antigonish, N.S., on January 26, 27 and 28.

The following officers were elected for the ensuing year:

President, A. S. MacMillan, Antigonish; vice-president, R. J. Messenger, Lawrence-town; second vice-president, William Murray, Union Centre.

Directors:—Rev. Fr. M. Tompkins, Antigonish; Walter Churchill, Yarmouth; Samuel Freeman, Amherst; Wallace Rhodenizer, Bridgewater; John McQueen, Leith's Creek. Exhibition Commissioners:—Howard Kennedy, Alma; F. W. Foster, Kingston.

CANADIAN COUNCIL OF AGRICULTURE.

A meeting of the Canadian Council of Agriculture was held in Regina, on February 13th, 1915, at which the following officers were elected for the ensuing year: President, J. A. Maharg, Saskatchewan; vice-president, James Speakman, Alberta; secretary, Roderick McKenzie, Manitoba. The president of the United Farmers of Ontario, to be elected at the convention of that body this month, will be Second Vice-President.

THE AYRSHIRE BREEDERS' ASSOCIATION OF CANADA.

The 44th annual meeting of the Ayrshire Breeders' Association of Canada was held in Montreal on February 9th and 10th. The officers elected were as follows:—

President, A. H. Trimble, Red Deer, Alta.; vice-president, M. St. Marie, Compton, Que.

Directors for Eastern Canada—Hon. Senator Owen, R. R. Ness, P. D. McArthur, Fred McRae, M. St. Marie, L. J. Tarte, Jas. Bryson.

For Western Canada the directors are the same as last year.

Secretary-treasurer, W. F. Stephen, Huntingdon, Que.

RESOLUTIONS.

The following resolutions were adopted:

That a committee be appointed to confer with the executives of other organized Live Stock Associations with the view of organizing an Executive body whose duty will be to assist the live stock interests in the country. While this Committee might be able to assist in many lines of live stock advancement, the one of vital importance now before the stockmen is the question of freight rates which have recental been so increased as to prove detrimental to the live stock interests.

That in the publication of the Herd Book in future, the Record of Performance test be published only once, with English and French headings.

That in future only the cows and bulls that have qualified during the year be printed in the Herd Book of that year.

That in publishing the Herd Book in future, we omit the description of markings, simply stating the general colour, also that the sire of sire and dam be omitted, and that instead of publishing the pounds of milk and fat the record number of the cow be given and the volume in which her test is printed.

That we believe the time has come when all Ayrshires should have some mark of identification, and we believe that the tattoo system is the best for this purpose. We hereby recommend this system to our breeders with a view to making it a permanent rule at some future meeting, that all Ayrshires be thus marked.

That whereas during the past year the Registration Committee have been called upon to pass approval on application forms received at the Record Office, because of inaccuracies, omissions, and discrepancies in these forms, largely caused through carelessness or a lack of thorough knowledge of his herd on the part of the owner, or through lack of information caused by the death or removal of the former owner of an animal, therefore we strongly recommend to our breeders the advisability of keeping private herd records and entering the birth date and sale date of animals therein immediately after birth or sale, taking accurate markings on the diagram, and forwarding all applications for registration and transfer to the Record Office *promptly*. By so doing breeders would save much unnecessary delay in the issuing of the Certificates.

That the rule in regard to the time limit in the Record of Performance Test be left as it is at present, with the exception that the time limit previous to freshening be eliminated in the mature and four year old classes.

That a cup be given each year to the winning two-year-old, three-year old, four-year old and mature classes in the Record of Performance Test, the cup to be of silver and to the value of not more than \$15.00, the score to be on the basis of pounds of milk and butter fat given during the period of test.

That we hereby recommend to all Fair Boards under whose supervision a Dairy Test is conducted, that where there is not now a rule to that effect, that a rule be inserted, that all cows and heifers entered in the test be required to freshen at least SEVEN full days before the test commences.

That in view of the fact that there are many Ayrshire cows that have registered in the Record of Performance test, that we recommend to Fair Boards the advisability of introducing in their respective prize-lists, classes for cows and heifers that have qualified in this test; the awards to be based on points allowed for conformation

and an additional point for every ten pounds of butter fat over and above the amount required for qualification.

That should any Canadian Ayrshire breeder exhibit their herds at the Panama-Pacific Exposition to be held at San Francisco next October, that they be granted, from the funds of the Association, an amount equal to one half the freight rate to and from San Francisco, going and returning by the shortest route.

THE NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.

The annual meeting of the Nova Scotia Fruit Growers' Association was held at Middleton, N.S., from January 20th to 22nd. The officers elected for 1915 are as follows: President, A. E. MacMahon, Aylesford; vice-president, F. A. Chipman, Nictaux; secretary, Manning Ells, Port Williams.

The following resolutions of particular importance to the Fruit Growers were passed:—

RESOLUTIONS.

WHEREAS, it is recognized that an opportunity exists in Great Britain to greatly increase the demand for Nova Scotia apples;

AND WHEREAS, immediate action would take advantage of the great wave of Empire loyalty now in evidence;

THEREFORE RESOLVED, that the Nova Scotia Fruit Growers' Association appoint a committee of five with authority to collect a fund, co-operate with the government, (if thought advisable) and prosecute a vigorous publicity and sales promotion plan in Great Britain.

WHEREAS, recognizing the great work that is being done by G. E. Saunders at Bridgetown in the Dominion Entomological Department on behalf of the Fruit Growers of Nova Scotia;

AND WHEREAS, recognizing the inefficiency of the temporary building now in use,

WE RECOMMEND the Dominion Government to erect a permanent building for the carrying on of this work.

WHEREAS, there has been during the past year an agitation in the press and elsewhere regarding the necessity for adopting a national dish or edible;

AND WHEREAS, the fruit interests of the Dominion in various ways have expressed the wish that the apple should be given the place of honour;

THEREFORE RESOLVED, that this Nova Scotia Fruit Growers' Association recommend the selection of the apple as a national dish or fruit.

WHEREAS, it has been reported by Mr. Sladen, Assistant Dominion Entomologist, that foul brood exists in some of the apiaries of this province,

THEREFORE, RESOLVED, that the Maritime Beekeepers' Association respectfully bring to the attention of Mr. M. Cumming, Secretary for Agriculture, the immediate need of having a competent person appointed to inspect apiaries and give instructions to beekeepers how to combat the disease.

AND FURTHER RESOLVED, that the local legislature at its next session, be asked to pass an act for the Suppression of Bee Diseases, similar to the Acts of Ontario, Quebec and British Columbia.

WHEREAS, honey exhibited at the Provincial Exhibition at Halifax, has, in the past not been given the importance it demands:—

THEREFORE, RESOLVED, that this Association bring the matter to the attention of the Exhibition Commission through Mr. Hall, their secretary, and request that in future all honey exhibits shall be provided with space in the Horticultural Building, among the fruit and flowers where it naturally belongs.

ONTARIO CORN GROWERS' ASSOCIATION.

The seventh annual show of the Ontario Corn Growers' Association was held early in February in the Armories, Chatham. One hundred silver trophies were offered and over one hundred growers, who did not exhibit last year, competed for these trophies. A feature of the Show was a number of exhibits of farmers' clubs advertising their districts.

At the annual meeting the following officers were appointed for the year 1915:—

Honorary president, Byron Robinson, Wheatley; president, R. W. Knister, Comber; first vice-president, Lester Gregory, Darrewn; second vice-president, L. A. Hankinson, Aylmer; secretary J. W. Noble, B.S.A., District Representative, Essex, Ontario; treasurer, J. H. Coatsworth, Kingsville.

A special committee passed the following resolution, which was unanimously adopted:

"WHEREAS, during the past few years the Ontario Corn Growers' Association and the Canadian Seed Growers' Association, Provincial and Federal officials of the Department of Agriculture and others interested in the corn raising industry of Canada, have been urging all who deal in seed corn to ship their corn on the ear, it having been abundantly demonstrated that seed corn handled in this way retains

its vitality better and gives better results generally; and whereas,

"It is learned that the present tariff rates on seed corn discriminate in favour of shelled corn, it is hereby resolved that this association bring this matter before the Railway Commission for their special consideration. The association asks that corn shipped on the cob, in car lots or less than car lots, be given a lower rating than shelled corn, and further, that all corn shipped from Canadian points to other Canadian points be given at least as low a rating as is given corn shipped from American points to Canadian points."

THE CANADIAN SEED GROWERS' ASSOCIATION.

The eleventh annual convention of the Canadian Seed Growers, Association was held in Ottawa on March 11th and 12th. The following officers were elected. President, Dr. James W. Robertson, Ottawa; vice-presidents, Professor C. E. Zavitz, O.A.C., Guelph, Ont.; G. A. Gigault, Deputy Minister for Agriculture, Quebec; Professor L. S. Klinck, Dean of the Agricultural College, Victoria, B.C.; secretary-treasurer, L. H. Newman, Ottawa.

Executive Council: Professor C. A. Zavitz; Professor Jas. Murray, Macdonald College; C. F. Bailey; Assistant Deputy Minister of Agriculture for Ontario; Professor T. J. Harrison, Manitoba Agricultural College, Winnipeg; F. M. Thompson, Regina, Sask., and L. H. Newman.

The secretary reported that 241 applications for seed had been received during the year as compared with 236 in 1913 and 118 in 1912. Sixty-four seed centres have been established throughout Canada.

Dr. C. C. James delivered an address in which he urged upon the meeting the importance of the work of the Association, more especially at the present time, when the production of food is such an important factor as it will be during the present year. Mr. J. H. Grisdale, Director of Experimental Farms, outlined the systems of crop raising and the production of better seed on the Dominion Experimental Farm. Dr. C. E. Saunders, Dominion Cerealist, presented an interpretation of plot experiments. The work of the Dominion Seed Branch was explained by Mr. George H. Clarke, Seed Commissioner.

An important feature of the meeting was a report from the representative of the Association in eight of the provinces as to what is being done in each of these provinces for the improvement of seed. The Association has issued a catalogue of registered and improved seed produced in 1914 and offered for sale.

The Manitoulin Marketing Association was recently organized at Kagawong, Manitoulin Island, Ont., and is the combination, in a commercial way, of some 12 Farmers' Clubs. The officers of the Association are as follows:

President, W. O. Runnalls, Barrie Island; vice-president, Geo. Strain, Gore Bay; secretary, John Gibson, Foxey; treasurer, Nelson Campbell, Foxey.

The annual convention of the Dairymen's Association of the province of Quebec was held on March 3rd and 4th, at Saint Gabriel de Brandon, Quebec.

The Western Ontario Dairymen's Association, through the contributions of the factorymen and patrons, has contributed \$4,400 to the Red Cross and Belgian Funds.

NEW PUBLICATIONS.

THE DOMINION DEPARTMENT OF AGRICULTURE.

THE DOMINION EXPERIMENTAL FARMS.

Report of Experimental Farms. The twenty-seventh annual report of the Experimental Farms and Stations, which is for the year ending March 31st, 1914, is issued in two volumes. The first volume contains reports of the Director and the Divisions of Chemistry, Field Husbandry and Animal Husbandry. Volume two contains reports of the Divisions of Horticulture, Cereals, Botany, Entomology, Forage Plants, Poultry and Tobacco. Following the plan put into operation the previous year, this report is divided into two sections (a) and (b). Section (a) contains general information as to what is being done on the Experimental Farms System. Section (b) contains detailed reports of the various lines of experimental work under way throughout the System during the year. This latter section is intended more immediately to aid the farmer in the various details of his work.

Seasonable Hints is the title of the latest publication of the Dominion Experimental Farms, the pages of which are replete with suggestions and recommendations made by the officers of the various Divisions of the Dominion Experimental Farms system. In it may be found helpful suggestions regarding the various branches of the live stock industry, fertilizers, forage plants, crop rotations, preparation of seed and of land, weeds,—identification and eradication, management of bees, poultry, fruits, flowers and vegetables.

Circular No. 6 of the Division of Botany, prepared by H. T. Güssow, Dominion Botanist, outlines, in detail, the Regulations under The Destructive Insect and Pest Act governing the Importation, Sale, Shipment and Exportation of the Common or Irish

Potato. (*Solanum tuberosum* L.) An appendix includes the text of The Destructive Insect and Pest Act and the general regulations under this Act governing insects, pests and plant diseases.

Division of Cereals. Summary of Results, 1914, Bulletin No. 81, prepared by Dr. Chas. E. Saunders, Dominion Cerealists, and the Superintendents of the Branch Experimental Farms and Stations, deals with the grain crops of 1914, and gives an account with results of the experiments with cereals conducted at the Central Experimental Farm, Ottawa, and at the Branch Experimental Farms and Stations. A list of recommended varieties of grain for the different provinces is also included.

THE DAIRY AND COLD STORAGE BRANCH.

Bulletin No. 43 consists of The Cold Storage Act of 1907, the Amendments of 1909, the Regulations of March 11, 1910, and the new Regulations of June 20th, 1914. This Act encourages the establishment of cold storage warehouses for the preservation of perishable food products.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE AND OF EDUCATION. NOVA SCOTIA.

Rural Science Bulletin. THE AGRICULTURAL GAZETTE has received the first copy of Rural Science Bulletin edited by L. A. DeWolfe, M.Sc., Director Elementary Agricultural Education, Nova Scotia. It deals, in a comprehensive manner, with the subject of Rural Science, telling what Rural Science teachers are, and what they are doing. The leaflet also contains information relative to school exhibitions and other agencies which prove helpful in the rural school work, and concludes with a note, outlining the future of Rural Science and a list of suggested nature topics for the month of February. These suggestions are for the use of teachers in teaching Nature lessons to pupils of rural schools.

ONTARIO.

Plum Culture in Ontario, by F. M. Clement, B.S.A., Director of Horticultural Experiment Station, Vineland Station, Ontario. This is Bulletin No. 226 and includes a study of the present status of the industry, the causes of the lack of interest, an outline of the cultural methods of the most successful growers, a description of a few important commercial varieties of plums, and offers suggestions for the future development of the industry.

Cherry Fruit Flies, by L. Cæsar, B.A., B.S.A., Provincial Entomologist and Assistant Professor of Entomology, O.A.C., Guelph, Ont., and G. J. Spencer, B.S.A., Demonstrator in Entomology. This is Bulletin No. 227, and is the result of several years of observation of insects attacking cherries; these have been identified, one as the White Bodied Cherry Fruit Fly and the other as the Black Bodied Cherry Fruit Fly. The life histories of both these flies are given in this bulletin, together with methods of control. The pages are suitably illustrated, the illustrations showing the flies and the damage done to the cherries, and successful methods of control.

Pure Bred Live Stock Census, 1914, as issued by the Prince Edward County Branch of the Ontario Department of Agriculture, is a complete list of the breeders of pure bred stock in the county, together with the number and ages of all animals of every breed in their possession.

MANITOBA.

Growing Plums in Manitoba, Circular No. 24, is a reprint of a paper delivered by Mr. A. P. Stevenson, Dunstan, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association in the Agricultural College. This circular outlines the general directions for the successful culture of the plum and contains a list of improved native plums that may be successfully grown in the province.

Growing Cherries in Manitoba, Circular No. 25, is a reprint of a paper delivered by Mr. A. P. Stevenson, Dunstan, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association in the Agricultural College. This circular outlines the successful methods of cherry cultivation, and submits a number of varieties suitable for the province.

The Control of Insect Pests in Manitoba. This is circular No. 26, and is a reprint of a paper delivered by Dr. C. Gordon Hewitt, Dominion Entomologist, before an annual meeting of the Manitoba

Horticultural and Forestry Association at the Agricultural College.

Pruning Trees for a Cold Climate, Circular No. 27, is a reprint of a paper delivered by Mr. D. W. Buchanan, late director Buchanan Nurseries Company, St. Charles, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association at the Agricultural College. This circular, while dealing with the pruning of all species of trees, gives most complete directions for the pruning of the apple and plum trees.

Barn Ventilation, Bulletin No. 13, by L. J. Smith, B.S., Professor of Agricultural Engineering, Manitoba Agricultural College, describes the Rutherford and King systems of ventilation, and discusses them in such a manner that they may be helpful to farmers throughout the province in farm building construction.

Care of Cream, Bulletin No. 14, prepared by the Dairy Department, Manitoba Agricultural College, is a general treatise on the following subjects: The Care of Cream for Creameries; The Storing of Ice and the Grading of Cream and Butter.

Manitoba Boys' and Girls' Clubs. Under this caption the Extension Service Section of the Manitoba Agricultural College has issued Bulletin No. 15, which contain the details of the organization of boys' and girls' clubs, and outlines eight contests, providing rules, governing each contest and general instructions for the contestants. These contests are as follows: Farm Mechanics, Fodder Corn Growing, Pig raising, Potato Growing, Poultry Raising, Bread Baking, Sewing, Canning and Preserving.

SASKATCHEWAN.

The Feeding Value of Corn and its Comparison with other Grain for Feeding Purposes, by W. J. Rutherford, Dean of the College of Agriculture, Saskatoon, is a general treatment of corn as a food, outlining its particular value to the animal, and its function, and makes comparisons with other grains for feeding purposes and shows the place of corn in rations for dairy cows and for work horses.

Tree Planting for the Schools of Saskatchewan. This is a special bulletin issued by the Saskatchewan Department of Education, and deals with the natural distribution of the various kinds of trees throughout the province, points out the advantage of forests and forest-stations, what has been done in Saskatchewan, tree-planting in connection with the rural schools, and deals with the subject of tree planting under the headings of "Prepara-

tion of Soil," "Prairie Tree Planting—Ornamental, for Shelter, for Fuel and Fencing," "Care and Management of Plantations," Suitable Varieties for Plantations and Sandbreaks," "Propagation of Trees" and "Varieties of Trees Suitable for Saskatchewan."

BRITISH COLUMBIA.

Agricultural Education in Public and High Schools. This is Circular No. 1, published by the Department of Education of the province of British Columbia, and constitutes a statement of the policy and plans of the Department of Education with respect to the introduction of elementary agriculture in the public and high schools of the province.

MISCELLANEOUS.

How to Make the Farm Pay. This is an illustrated bulletin of 20 pages issued by the Agricultural Extension Department of the Great Northern Railway, St. Paul, Minn., U.S.A., and outlines the work of the Great Northern in endeavouring to improve the land and raise the level of farm production throughout the country traversed by its lines, and deals with a number of experiments along the various lines of progressive agriculture.

The Imperial Bureau of Entomology, re-printed from Science, N.S., Vol. 37, No. 957, pages 659-660, March 2nd, 1913. In this pamphlet Dr. C. Gordon Hewitt, Dominion Entomologist, outlines the organization known as the Imperial Bureau of Entomology, the services it can render in the matter of control and preventing the spread of insects, and the functions of the organization.

Cornell Rural School Leaflet for Teachers as published by the Department of Rural Education, New York State College of

Agriculture at Cornell University, contains much information relative to subject matter in Nature Study and Elementary Agriculture for 1914-1915 as outlined in the New York State Syllabus for Elementary Schools. This leaflet is profusely illustrated, contains 275 pages, and outlines many practical elementary lessons dealing with plants, birds, insects, trees, and many of the domestic animals.

Rural Survey, County of Huron, Ontario. This is a report of a rural survey of the agricultural, educational, social and religious life of Huron County, Ontario, as prepared for the Huron Survey Committee by the Department of Temperance and Moral Reform of the Methodist Church, the Board of Social Service and Evangelism and the Board of Sabbath Schools and Young People's Societies of the Presbyterian Church. This Survey has the distinction of being the first Rural Survey in Canada, and in making the Survey and preparing the Report, the Co-operative Organizations have aimed to ascertain and display the facts, present the actual conditions, bring into high relief the most striking features, whether good or bad, and make clear a programme or policy for the future.

In the Report the three following points stand out with clearness and emphasis:—(1) The supreme importance of the development in children and young people of the highest character through education and training; (2) that no one institution or movement will solve the country problem, but that all forces—public schools, farmers' organizations, Governmental action, the Church—must unite and co-operate for that end, and (3) that from its natural position and leadership, its trained and educated ministry, complete organization, etc., the Church is the organization that is best qualified to lead in the rehabilitation of the country.

NOTES.

In the report of the Board of Agriculture for Scotland for February the area under wheat in Scotland this year is estimated to be 10 per cent greater than last year.

Mr. James Brown, B.S.A., who has been acting as an assistant in the Peel County Branch of the Ontario Department of Agriculture, has been appointed to the staff of the Manitoba Agricultural College, Winnipeg. Mr. W. J. Stark, B.S.A., of Kent County, has been appointed to fill the vacancy.

An appeal issued to the farmers of Austria by the Austrian Minister of Agriculture, in which he urged them not to leave a single plot of ground anywhere uncultivated, has been followed by a pre-emptory decree by the Austrian government, ordering land owners to sow, immediately, every available part of their ground with spring wheat. Where necessary, the local authorities are empowered by the decree to provide labour for this work and to recover from the sale of plots the expenditure incurred. Failure to comply with the decree is punishable by heavy fines or imprisonment.

Commencing March 10th and ending April 2nd, a farmers' short course in steam traction engineering will be given at the Manitoba Agricultural College, Winnipeg. The course will cover all phases of practical steam engine operation, together with a thorough study of all the technical parts of the engine.

The Extension Department of the University of Saskatchewan arranged short courses at the following points:— Luseland, February 16-17; Hanley, February 19-20; Grenfell, February 22-23; Windthorst, February 25-27; Qu'Appelle, March 1-3; Creelman, March 5-6; Arcola, March 8-10; Redvers, March 12-13; Cardnuff, March 16-17; Alameda, March 18-19; Weyburn, March 22-24.

The New Brunswick Department of Agriculture announces a series of lectures and demonstrations in the several branches of farming to be held at Sussex from the second to the twenty-seventh of March. The subjects of study for the first two weeks will include Dairying, Horticulture, Poultry, Beekeeping, etc., for the last two they will be Live Stock, Field Crops and Soil Management in their different phases. For those who are unable to come for the longer period a special three days' course will be given on March 25th, 26th and 27th.

The need for education in methods of highway construction and maintenance in Manitoba has led to arrangements being made for the holding of a short course and convention at the Manitoba Agricultural College, Winnipeg, beginning March 3rd.

It is planned to have the course as practical as possible, and to deal with such subjects as road drainage, materials for culverts, road surveys, road surfaces, repair of roads and cost of building and maintaining various classes of highways. Prominent highway builders will be brought from Ontario, and the States to the south, to supplement the force of local engineers who will lecture and demonstrate on the various subjects. By arousing a greater interest in better highway construction, it is believed that a great saving can be effected in road building.

During the month of February short courses in Agriculture were held at the Regina College, Regina, and at the Moose Jaw College, Moose Jaw, Saskatchewan. The lecturers at these short courses were Professors Bracken, Shaw, Baker and Smith of the College of Agriculture, Saskatoon, Saskatchewan.

That the gift of her Royal Highness the Duchess of Connaught of a box of maple sugar to every member of the first Canadian contingent has resulted in quite an unexpected boom to the industry throughout the Dominion is shown in a cable received from Lord Stamfordham, Secretary to his Majesty the King, notifying her Royal Highness that the Canadian product is to be found not only on the Royal table but also in every hotel and large store in London.

As a token of their appreciation the Maple Sugar and Syrup Co-operative Agricultural Association presented to Her Royal Highness an engrossed address bearing more than three thousand signatures. The address reads as follows:—

"To Her Royal Highness the Duchess of Connaught and Strathearn:

"Your Royal Highness:—

"We, the undersigned representatives of the Maple Syrup and Sugar Producers of the Dominion, recognizing that Your Royal Highness' generous gift of maple sugar to the Canadian troops abroad has had the effect of enormously increasing the popularity of Canada's most distinctive and typical national product, both at home and in Great Britain, and therefore of laying the foundation of what promises to become an important industry, beg to tender to Your Royal Highness our sincere and hearty thanks.

The timely fostering of this industry, which, although it might be a source of vast wealth to our country, has hitherto had to maintain an unequal and inequitable battle against the forces of adulteration will not be amongst the least of Your Royal Highness' titles to the remembrance and the gratitude of the people, and especially the farmers of Canada."

Corn is called the "king of the grains" all over the middle West states. It is poor in protein and ash, but rich in starch and oil. It is used largely for feeding to hogs and beef cattle for fattening purposes and to horses at work in winter. It is, however, no better than barley or wheat in this respect, except that it is more palatable than either. It is too poor in protein and ash to feed exclusively to young animals, dairy cows or to breeding animals. Corn is not a balanced ration and must be mixed with other grains such as oats, bran, shorts and ground alfalfa.—*Professor W. J. Rutherford.*

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- The Oldest Canadian Veterinary College. History of this Ontario Institution, Now Under the Department of Agriculture,
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- Agriculture's Conquest of the Atmosphere. A fascinating account of the Romance of Alfalfa and of the Work of The Great Hansen,
Dr. C. C. James, *Prairie Farm and Home*, Regina, March 3, 1915, page 2.

"Efficiency is the power of doing one's most and best, in the shortest time and easiest way to the satisfaction of all concerned."

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April, 1915

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR: J. B. SPENCER, B.S.A.

Issued by direction of
THE HONOURABLE MARTIN BURRELL
Minister of Agriculture

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OF CANADA

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APRIL, 1915

No. 4

THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

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THE POTATO

ALTHOUGH it is recorded that the potato (*Solanum tuberosum*) was used as human food more than a thousand years ago, its culture did not extend beyond the boundaries of South America until about the middle of the sixteenth century. To Sir Walter Raleigh is credited the introduction of the potato into England and in 1586 it was definitely known to have been grown in Ireland. Since that time the cultivation of this crop has extended over the civilized globe. So great has the reliance upon it become that when blight occurred in Europe at various times during the past three-quarters of a century, the failure of the crop was attended by serious famine conditions.

The potato has acquired a position next to wheat, for human consumption, in the annual field crops of the world and enormous quantities are utilized in the arts and for stock food. The world's crop of potatoes exceeds that of wheat by some two billion bushels. Valuing wheat at one dollar and potatoes at fifty cents per bushel, the world's crop in 1912 may be set down at an approximate worth of \$3,800,000,000 for wheat and \$3,000,000,000 for potatoes. Last year the figures for Canada were, for wheat 161,280,000 bushels, valued at \$196,418,000, and for potatoes 85,672,000 bushels, valued at \$41,598,000.

Last year was a good year for potatoes, as a yield of 180 bushels per acre was harvested over Canada, which was some twenty bushels higher than the average for the past five seasons. Even the yield of 1914 leaves a wide margin before the reasonably full crop is reached, as from 400 to 450 bushels per acre are commonly grown where the recognized conditions for success are applied to the soil, the seed and the growing crop. The improvement in the potato in fruitfulness, quality and freedom from disease has engaged the energies of experts in many parts of Canada. The outstanding features of what is being done and the lessons learned by the Dominion and Provincial Departments of Agriculture, the Canadian Seed Growers' Association and Macdonald College, are brought together in this issue of THE AGRICULTURAL GAZETTE.

AGRICULTURAL CONFERENCES

THE Agricultural Conferences among farmers in each section of the different provinces arranged by the Dominion Department of Agriculture, as a part of the campaign to encourage increased production by improved methods of farming, and to distribute detailed and complete information as to the needs of the Empire, and the opportunities available owing to changed conditions of production throughout the world, have been completed in all the provinces excepting Quebec, where a second series, owing to the success of the first, has been thought desirable. The Department has been represented at each of the conferences by a committee of three. Two of the delegation discussed practical agriculture, while the other representative delivered an address of a patriotic character. The various provinces were organized in different ways, there being one officer in each province to supervise the work. His duty was to select the places of meetings; to advertise the conferences and arrange for local speakers and presiding officers. Approximately 554 conferences have been held, divided as follows among the different provinces:

Prince Edward Island, 43; Nova Scotia, 30; New Brunswick, 40; Quebec, 210; Ontario, 101; Manitoba, 25; Saskatchewan, 46; Alberta, 44; British Columbia, 28.

The conferences were arranged for different dates in different provinces. The first conference was held in Prince Edward Island on January 5th, and the last conferences, except in Quebec, as previously mentioned, were held in Northern Ontario and Saskatchewan on April 3rd.

In Prince Edward Island, where a large number of Conferences were held in small places and close to-

gether, the average attendance was about 130.

In Nova Scotia the meetings have been wonderfully successful in general, and some additional conferences were arranged to comply with local requests.

In New Brunswick conferences were held in both the French and English districts. A large portion of the potato crop of 1914 was left in the hands of the producers on account of the lack of ocean transport facilities. The suggestion was made that more oats and more hay should be grown, and in the wheat-growing sections more efforts should be made to produce a home supply of breadstuffs. It is thought that the campaign will help to increase the grain area very considerably. Several additional conferences were requested and arranged for.

In the Eastern Townships in Quebec, the average attendance at twenty-four meetings was 175. In some sections the subjects taken up were, principally, the better selection of seed grains; treatment for smut; better cultivation; growing of more silage and roots, to make more economical food for stock; advising the saving of all the best breeding animals so as to increase the food supply. The one point which was emphasized very strongly was the keeping of more sheep, especially in this section, on account of the rough pastures which are getting very much infested with noxious weeds; and on account of the prospect of wool being high, the value of sheep as meat production, and the very little labour required in connection with the care of same.

In the French speaking districts of Quebec, the conferences were arranged by the Live Stock Branch of the Department and at 114 meetings,

PATRIOTISM and PRODUCTION

The Call of the Empire to the Farmers of Canada

"Approximately twenty million men have been mobilized in Europe. A large proportion of these have been withdrawn from the farms of the countries at war. Even in neutral countries large numbers of food producers have been called from the land to be ready for emergencies. It is difficult for us to realize what will be the effect on food production through the withdrawal of several million men from all the great agricultural countries of Europe. These millions cease to be producers, they have become consumers,—worse still, they have become destroyers of food."

HON. MARTIN BURRELL, Minister of Agriculture.

Britain must have food—food this year, and food next year. Britain is looking to Canada to supply most of that food. We are sending our surplus now, but we must prepare for a larger surplus this year and next year. Patriotism and Production must go hand in hand.

Because of this need of the Empire for more food, and the call to Canada in that need, the Canadian Department of Agriculture has arranged for a series of Conferences throughout the Dominion, with the object of giving suggestions as to the best ways of increasing production of the particular products needed at this time.

At these Conferences agricultural specialists, who have studied agricultural conditions and production throughout the world, and the best means of increasing agricultural production in Canada, will give valuable information and suggestions to the farmers, live-stock men, dairymen, poultrymen, vegetable growers, and other producers of this country. The Canadian Department of Agriculture urges you to attend as many of these Conferences as possible; also to watch for other information on the subject that will be given in other announcements in this newspaper.

**ATTEND
YOUR
CONFERENCE**

Put Energy into Production of Staple Foods

The Government does not ask farmers to work harder, so much as it urges them to make their work more productive, and to produce those staple foods that the Empire most needs and that can be most easily stored and transported.

Europe, and particularly Britain, will need the following staple foods from Canada more than ever before:

Wheat, oats, corn, beans, peas.

Beef, mutton, bacon, and ham.

Cheese and butter.

Poultry and eggs.

Vegetables, such as potatoes, onions, and turnips.

The larger the yield of these staple food products, the greater the service to the Empire. Germany in the last

ten years has doubled the average yield of the majority of her field crops largely through better seed, thorough cultivation and use of fertilizer. But in making your plans, don't let your enthusiasm and loyalty make you attempt more than you can carry through. Millions of bushels, instead of millions of acres, should be the aim of Canadian farmers. And while the Empire's armies are busy putting down German Militarism, let us at home appropriate the best of Germany's agricultural methods for the Empire's advantage.

The Government urges farmers, stockmen, dairymen and other producers to make a wider use of the Free Bulletins issued by the Canadian Department of Agriculture.

This Department has issued over two hundred bulletins. A list of bulletins is printed in a booklet entitled "Publications Available for Distribution."

Clip out, fill in and mail the coupon below and get this booklet. Then select the bulletins that will be of value to you. Mail your coupon right now. Address the envelope to Publications Branch, Canadian Department of Agriculture, Ottawa. Do not put a stamp on the envelope. No stamp is necessary. Your coupon will be "On His Majesty's Service."

Give expression to your desire to assist the Empire in this crisis by co-operating in this great "Patriotism and Production" movement.

**Canadian
Department of
Agriculture,
Ottawa, Canada**

Publications Branch, Canadian Department of Agriculture, Ottawa.

Please send list of Publications Available for Distribution.

Name

P. O. Address

County Prov.

included in the first series, the attendance averaged at least 200. It is reported that in certain districts the numbers present ranged from 300 to 800 people. It is stated, on good authority, that these were the most successful agricultural conferences ever held in the province, the numbers of people present being 60 per cent in excess of the average attendance at rural conferences on other occasions. The interest on the part of the farmers was very keen and evidently represented a desire on their part to meet the situation which was presented to them in an earnest and patriotic way. Large numbers of ladies were present at each meeting. The success of the campaign may be attributed, in no small degree, to the co-operation of the clergy of all denominations and particularly of the priests of the various parishes. The publicity given the work in Quebec has been due very largely to their efforts and, through their attendance at the meetings and the appropriate addresses which they delivered, the movement for increased production in the province received a very strong impetus.

In Ontario the average attendance at each conference was 186. The reports received show that the importance of conserving the good breeding stock is realized and that it is recognized that while farm labour is a serious problem, production can be increased with little additional work by seed selection, and the use of good varieties. One of the reports states: "Farmers well realize the part they have to bear in the present war. Great feeling of patriotism shown. Willing to economize that more foodstuffs might be offered. Selection of varieties and cultivation paramount factors." At the large centres considerable interest was aroused in the question of making use of vacant lots and backyards for vegetable gardens.

A report from Manitoba states: "Most of the meetings held to date

PATRIOTISM and PRODUCTION

The Women's Institutes of Canada have done a magnificent work since the war began. Your contributions to the Red Cross and Belgian Relief Funds have been truly patriotic. Your example to the men is genuine, for you have given of your time, your labor and your savings. We shall not really give to these patriotic causes until we give so as individually to feel it. To the Women of Canada my message is—Keep on working and giving, and stimulate the men to do their full duty in this time of national peril. Canada is passing through a trial that she hardly realizes as yet. May the women of Canada prompt us who stay at home to do our full duty and help us to bear the burdens that inevitably follow war.

HON MARTIN BURRELL
Minister of Agriculture

What can women do?

The farmhouse is the farm headquarters. Here the situation is discussed and here the plans are made. Have you read the stories in the Agricultural War Book? Have you seen "Patriotism and Production" advertisements in the farm and other papers? These were apparently written for the men, but we know that if the women read them the men will soon hear about them and there will be larger plans made for 1917.

POULTRY AND EGGS

Do you know that Canada does not produce enough eggs to supply our own people? We are short by 1,500,000 laying hens. The war has cut off Great Britain's usual supply of eggs by 100,000,000 dozen. Look after your poultry and market your eggs right. Send at once to the Agricultural Department at Ottawa and to your Provincial Department of Agriculture for their Poultry Bulletin. Find out about the egg circles.

VEGETABLES

The farm woman must provide for the farm table. The farm garden is yours for the requirements of your own home as well as for others. Make plans now to have a first class vegetable garden this year and so that the men provide for the proper cultivation and fertilizing. Would it not be possible to grow sufficient vegetables to have a surplus such as beans, peas, onions, potatoes, cabbage, carrots and parsnips. Did you ever try a small hot bed or cold frame?

Find out about these articles and try them this year.

BUTTER

Send your milk to a creamery or factory and save yourself time and trouble. If you can do this you will have time for other work.

THE BOYS AND GIRLS

They can help you with the poultry and eggs. Have your children a garden? Do they belong to the Boys Club or to the Girls Club? Get them interested so they can take their products to the School Fairs. Write to your Provincial Department of Agriculture for information as to what boys and girls can do on the farm. Now is the time to make farmers of them. Let them produce something for themselves and earn some money for their own bank account. This war means more to the children than it does to the adults. Help them the proper start to assist them in doing their share.

FARM HELP

What a great burden it is for you women to have to care for your own families and also to provide for the hired help! What a relief it would be if your farm help were housed by themselves. And what a great assistance it would be to the farmers to have a married man with his family living on the same farm and in a separate house. It would mean relief to you a more comfortable home for your family and more efficient service on the farm.

**Canadian Department
of Agriculture**

OTTAWA CANADA

have been excellent in every way ; in many cases the farmers have expressed themselves to the extent of saying that the conference was the best farmers' meeting ever held in the district."

In Saskatchewan the attendance is reported as an average of 60 in small towns, and 400 in larger places.

Alberta- The attendance at meetings varies from 50 to 250. The meetings here were completed on March 22nd. A keen interest was taken in the discussions, and there was a desire to take advantage of all the information which could be secured.

The returns indicate that the conferences were attended by some of the best class of farmers, who showed an anxiety to do what they could to assist the Empire and a desire to

discuss with others the best plan by which under present conditions the production of food supplies could be increased. There is great unanimity in the reports, showing the general impression that production can and would be increased by certain well-recognized principles: (1) Seed selection; (2) thorough cultivation; (3) proper fertilization.

In addition, however, one of the chief objects in holding these conferences was to gather information as to difficulties met with by the farmer in increasing agricultural production, and there are three things which suggest themselves in the official reports already received, viz.:--

The difficulty of securing efficient farm help; the necessity of some system to provide agricultural credits; the need of an organized system of marketing agricultural products.

THE SYSTEM OF PUBLICITY

TO direct attention to the conferences, and to emphasize the work they were instituted to perform, a unique system and style of advertising was adopted. Not alone did this advertising attract much attention on its own account, but it has been the subject of considerable eulogium from a variety of sources. Its originality of method and its effectiveness of character, it will be observed, have been thought worthy of preservation in the pages of THE GAZETTE. There were inserted in daily and weekly newspapers covering the country from coast to coast, a series of nine boldly displayed and appropriately worded advertisements, fac-similes of all of which are produced. Each, it will be noticed, makes a specialty of some branch, this one, for instance, of staple foods, that of the farm labour problem, the next of fertilization and cultivation, the fourth of live stock, the fifth of the variety of

foods required, the sixth of the splendid work women can do, the seventh of the need of greater poultry production, the eighth of the service that vegetable growers can render, and the ninth of the good use cities and towns could make of waste lands and vacant lots. All struck the one note, namely, that whatever is done should be done well. It was pointed out again and again at the conferences that it was neither increased acreage nor harder work that was asked of the farmer, but the greatest care in the preparation of the soil on the one hand, and earnest attention, on the other, to the selection of pure seed and the choice of breeding stock. That this meant both improved and increased production was the truth and impression it was sought to convey.

Evidence of the success of the advertising is furnished in a result that cannot be disputed. In the right hand corner of each display was

printed a coupon inviting application for bulletins, pamphlets, records and reports issued by The Publications Branch of the Department of Agriculture at Ottawa. So great has been the demand that not only have several editions been exhausted, but in other cases the quantity asked for individually was so large that corres-

pondence resulted which involved delay. While the utmost regret is felt that it has been found impossible to respond promptly to every application, it is also felt that the vigour with which the campaign had to be conducted placed the foretelling of the overwhelming demand out of the question.

PATRIOTISM and PRODUCTION

"I would urge the farmers of Canada to do their share in preventing the people of Great Britain from suffering want or privation."

HON. MARTIN BURRELL, Minister of Agriculture.

Fertilization and Thorough Cultivation Will Help the Empire

Patriotism and Production must go hand in hand. Great Britain and her Allies need food. Canada must help in supplying that need. You as a Canadian must do your share.

The soil is the basis of food production. Therefore, cultivation, proper fertilization and good seed are important factors. This does not seem very complex, but with the right crops on the right soil, this is the whole gospel of crop production.

How can you better fit yourself for your work this year?

- (1) Attend your Conference.
- (2) Talk matters over with your neighbor farmers. Give help and get help.
- (3) Read the agricultural articles in the daily and weekly press and in the agricultural papers.
- (4) Write to the Canadian Department of Agriculture at Ottawa and your Provincial Department of Agriculture for information.

Germany, France, Belgium, Holland and Denmark have increased their food production enormously during the last twenty years through cultivation, fertilization and seed selection. These are the countries that are being either devastated or most seriously affected by this war. Now is Canada's opportunity as well as Canada's responsibility.

The German Kaiser has cut off the supply of potash fertilizers from the rest of the world. This does not mean that we are without all supplies. Canadian fertilizers are still available. Use those "Made-

Attend Your Conference

in-Canada." Read the Bulletin on "Potash in Agriculture" issued by the Canadian Department of Agriculture, Ottawa.

Do not waste anything this year. Save carefully every pound of fertilizer in and around barns and stables.

Gather waste vegetable matter of all kinds. It will pay this year to clean up and to keep clean.

Wash-water contains potash. Coal ashes are good for heavy soils. Wood ashes are rich in potash and lime. Save everything.

Every day counts in getting on to the land. Drain off all surface waters as early as possible. Do not wait for Spring. This may mean a week or two more for growth.

Perform every farming operation thoroughly. Do the ploughing well. Disc and harrow the

land until a perfect seed bed is prepared. Sow the seed carefully. After seeding, roll if the soil is not too damp, then lightly harrow.

See that water furrows are run where needed.

Keep the weeds in check.

Do not economize in labour at seed time. A last stroke of the harrow after the seed bed seems perfect usually means extra bushels.

By each and every one of us doing the best that is in him and making the very wisest use of every acre, we as Canadian farmers, may do much to help our Country.

LIVE STOCK

Breeding stock are to-day Canada's most valuable asset. The one outstanding feature of the World's farming is that there will soon be a great shortage of meat supplies. Save your breeding stock. Plan to increase your live stock. Do not sacrifice now. Europe, as well as North America, will pay higher prices for beef, mutton, and bacon in the very near future.

Canadian
Department of
Agriculture,
Ottawa, Canada

No Postage Necessary.

Publications Branch, Canadian Department of Agriculture,
Ottawa.

Please send me these Bulletins—"Potash in Agriculture,"
"Alkali Soils," "Preparing Land for Grain Crops," "Crop
Rotation and Soil Cultivation"

Name

P.O. Address

County

Prov

PATRIOTISM and PRODUCTION

Complete Now Your Plans for the Year's Work

Canada, this year, cannot produce too much staple food. No matter how large her surplus for export, there will still be need of more food in Europe and Britain. The Canadian Government, therefore, urges all farmers and producers of food to attend the series of Conferences now being held throughout the Dominion under the direction of the Canadian Department of Agriculture. Let farmers get together at these Conferences and discuss the vital questions of the day. Agricultural Specialists will

ATTEND YOUR CONFERENCE

also be on hand to give valuable information as to the food products the Empire and her Allies most need, and to offer suggestions to increase production.

The important thing now is to complete at once your plan for the year's work — for increased production. By planning well in advance, each month's operations can be carried through more effectively when the time comes. Delays later on, through neglect of this, will mean loss to you and to the Empire.

Use the Best Seed

This year, for the sake of the Empire, farmers should be exceptionally careful in the selection of seed. Cheap seed is often the dearest. If every Canadian farmer would use only the best varieties, and sow on properly cultivated soil, the grain output of Canadian farms would be doubled. Deal only with reliable seedsmen. Write at once to Canadian Department of Agriculture, Ottawa, and to your Provincial Agricultural Department, for information as to the best varieties of seed to be

used in your particular locality, and use no others.

All grain intended for seed should be thoroughly cleaned and selected to retain only the strong kernels. You can reap only what you sow. It does not pay to sow weeds. Clean seed means larger crops and helps to keep the land clean. When you have your seed grain ready, put it through the cleaner once more.

Test Your Seed

Test your seed for vitality, too. Seed is not always as good as it looks. For example, oats, quite normal in appearance

and weight, may be so badly damaged by frost that their value for seed is completely destroyed. If you have any doubt as to the quality of your seed a sample may be sent free to the seed laboratory at Ottawa, or Calgary, for test. But in most cases this simple test will prove sufficient —

Take a saucer and two pieces of blotting paper. Place seed between blotting papers. Keep moist and in a warm place. In a few days, you will be able to see whether the vitality is there. Neglect to test your seed may mean the loss of crop.

The Farm Labour Problem

This is undoubtedly one of the most difficult problems to solve today. There is a surplus of labour in the cities and towns and a shortage in the country. Careful handling of the problem is necessary. Under present conditions, in addition to looking to the Governments for help, the necessary work should be largely undertaken locally.

Committees in every Town

The Government suggests the forming of an active committee in every town and city, composed of town and country men and women. This committee would find out the sort of help the farmers of their locality need, and get a list of the unemployed in their town or city, who are suitable for farm labour. With this information, the committee would be in a good position to get the right man for the right place.

Councils, both rural and urban, boards of trade and other

organizations could advantageously finance such work. Every unemployed man in the town or city who is placed on the farm becomes immediately a producer, instead of a mere consumer and a civic expense. With Britain and her Allies calling for more food, it will be a national loss, in fact a national crime to leave in the towns and cities any unemployed men who are capable, as thousands of them are, of being of assistance on the farm.

Have you a house on the farm for a married man? A real home for the farm labourer will solve this problem.

Free Bulletins

The Government urges farmers and other producers to make a wider use of the large number of Free Bulletins issued by the Canadian Department of Agriculture, Ottawa, or your Provincial Departments. There are special Bulletins on selection of seed, testing, early planting, that you should have. Clip out, fill in and mail the coupon below and get these Bulletins.

Send your coupon by first mail. Do not put a stamp on the envelope. Your coupon will be "On His Majesty's Service," and will travel free.

**Canadian
Department of
Agriculture,
Ottawa, Canada**

Publications Branch, Canadian Department of Agriculture,
Ottawa.

Please send me Bulletins relating to Seed.

Name

P.O. Address

County Prov

PATRIOTISM and PRODUCTION

"Belgium as a producing factor is obliterated from the map. Britain, always unable to sustain itself, will have stronger needs. That beautiful section of France where a little more than a year ago I saw the countless stocks of golden grain is now scarred with the deep-dug trenches. Surely, surely there is need for all that we can do."

HON. MARTIN BURRELL, Minister of Agriculture.

The Empire Needs Many Foods

The Empire asks Canada to increase the production of staple foods—not merely of wheat. Great Britain wants oats, corn, barley, peas, beans, potatoes, turnips, onions, meat, dairy products, poultry and eggs.

In the past Great Britain has imported immense quantities of these staple foods from Russia, France, Belgium, Germany, and Austria-Hungary as shown by the following:

Average Imports

Years 1910-1913

Wheat	28,439,809 bush.
Oats	23,586,304 "
Barley	15,192,268 "
Corn	7,621,374 "
Peas	703,058 "
Beans	639,653 "
Potatoes	4,721,590 "
Onions	271,569 "
Meat	28,509,786 lbs.
Eggs	121,112,916 doz.
Butter and Cheese	91,765,233 lbs.

The above mentioned sources of supply of staple foods are now, in the main, cut off as result of the war. Great Britain is looking to Canada to supply a large share of the shortage. Every individual farmer has a duty to perform.

Make Your Land Produce More

Millions of bushels rather than millions of acres should be Canada's aim. The fields already under cultivation should be made more productive. Keep in mind good seed and good cultivation.

That there is abundant reason to expect larger returns from the same area is conclusively shown when we compare the average production of the present time with the possible production. Note the following brief table which shows our average in 1914 and the possible production per acre —

	Average	Possible
Fall Wheat	20 43	52.
Spring Wheat	14 04	35.
Barley	16 15	69.
Oats	36 30	91.
Corn, Grain	70.	200.

Average Possible

Corn Ensilage (Tons)	12.	19
Peas	16 33	37
Beans	18 79	73
Potatoes	119.40	450
Turnips	421.81	1000.

By "possible" is meant the actual results which have been obtained by our Experimental Farms and by many farmers. These "possibles" have been obtained under intensive cultivation methods and conditions not altogether possible on the average farm, yet they suggest the great possibilities of increased production. By greater care in the selection of seed, more thorough cultivation, fertilization, better drainage, the average could be raised by at least one-third. That in itself would add at least \$150,000,000 to the annual income of Canada from the farm. It would be a great service to the Empire, and this is the year in which to do it.

Have You Attended Your District Conference?

If you have, you know that you heard once more the same old gospel of crop production. Have you talked over with your neighbour farmers the problems discussed at the Conference? If there are any questions on which you are at all doubtful write at once for information to the Canadian Department of Agriculture, Ottawa, or to your Provincial Department of Agriculture. They will be pleased to help you.

Increase Your Live Stock

Breeding stock are to-day Canada's most valuable asset. The one outstanding feature of the world's farming is that there will soon be a great shortage of meat supplies. Save your breeding stock. Plan to increase your live stock. Europe and the United States, as well as Canada, will pay higher prices for beef, mutton, and bacon in the very near future. Do not sacrifice now. Remember that live stock is the only basis for prosperous agriculture. You are farming, not speculating.

Make use of the Free Bulletins issued by the Canadian Department of Agriculture. They are mines of valuable information. The Government has nothing to sell and its reports are unbiased. There are special bulletins on wheat, oats, corn, barley, peas, beans, potatoes, turnips, onions and live stock. Send coupon below (no stamp on envelope necessary).

Canadian
Department of
Agriculture,
Ottawa, Canada

Publications Branch, Canadian Department of Agriculture,
Ottawa.

Please send bulletins on wheat, oats, corn, barley, peas, beans,
potatoes, turnips, onions and live stock.
(Mark out Bulletins you do NOT want.)

Name

P.O. Address

County

Prov

PATRIOTISM and PRODUCTION

"Looking at the situation in even its most favorable light, there will be a demand for food that the world will find great difficulty in supplying."

HON. MARTIN BURELL, Minister of Agriculture.

Great Britain Needs Food

VEGETABLE growers can render a real service to the Empire by increasing the production of vegetables, especially those that can readily be stored and transported. The war in Europe has devastated thousands of vegetable-producing acres and made it difficult for Britain to obtain her usual supplies. Vegetable growers are urged to select carefully the best varieties of seed and plant in properly cultivated and fertilized soil. Work hand in hand with the agricultural specialists of both the Canadian Department of Agriculture and your Provincial Department.

POTATOES There is no farm crop the yield of which, perhaps, can be increased so much as potatoes. Potatoes have been grown in a small plot at the rate of over 700 bushels per acre at the Central Experimental Farm, Ottawa. So great is the difference in the yield of varieties that while one gave this large yield, another, under same conditions, gave but 154 bushels. It will thus be seen how important it is to plant a productive variety.

BEANS The fact that beans have been a good price for a number of years, and also that they are of very great food value, should encourage every person who can to grow beans. Western market prices will not be influenced this year by foreign beans, and for that reason we should produce a bumper crop. The world will need them.

To the farmer's wife, the Government makes a special appeal. In many cases the vegetable garden and the poultry are largely under her direct management. Anything that she can do to increase production will be so much aid given to the Empire.

POULTRY and EGGS

Up to the commencement of the year, Great Britain imported from Belgium, France, Russia, Germany and Austria-Hungary poultry to the value of \$3,000,000 per year and eggs amounting to 136,000,000 doz. Canada in 1914 imported \$200,000 more poultry than she exported and imported \$2,500,000 more eggs than exported. Canada needs 1,600,000 more hens, averaging 100 eggs per year, to supply the home demand before having any eggs for export. The average egg yield per hen in Canada is but 80 eggs per year, which is very low. Careful selection, feeding and housing could in a few years bring the average up to 180 eggs per hen per year. It would be a profitable thing to strive for.

LIVE STOCK Breeding stock are today Canada's most valuable asset. The one outstanding feature of the world's farming is that there will soon be a great shortage of meat supplies. Save your breeding stock. Plan to increase your live stock. Europe and the United States, as well as Canada, will pay higher prices for beef, mutton, and bacon in the very near future. Do not sacrifice now.

Remember that live stock is the only basis for a prosperous agriculture. You are farming, not speculating.

It has been said that European farmers farm better than they know, Canadian and American farmers not as well as they know. Let us this year live up to what we know. Let our contribution to the "Patriotism and Production" campaign be bumper crops.

VACANT LOTS This call and this opportunity are not for farmers only. Residents of towns and cities can help the Empire by growing vegetables on small plots or raising chickens in their back yards. City Councils, Boards of Trade, and other organizations can help by arranging for the cultivation of vacant lots, which will relieve the unemployment situation at the same time. Those at home have a duty to perform as well as those in the firing line. From the interest manifested by the people in the "Patriotism and Production" announcements, we feel sure every one has good intentions. What we urge is that these good intentions be carried into action. Get busy. Every extra bushel you grow means that much more for export.

**Canadian
Department of
Agriculture,
Ottawa, Canada**

+++++ No Postage Required. +++++
 + Publications Branch, Canadian Department of Agriculture, +
 + Ottawa. +
 + Please send me Bulletins relating to Potatoes, Field Roots, Egg Production, Live Stock and Small Plot Culture. Mark out Bulletins you do NOT +
 + want. +
 + Name: +
 + P.O. Address +
 + County Prov. 16 +
 ++++++ +

PATRIOTISM and PRODUCTION

Pin your Faith to Live Stock

The one outstanding feature of the world's farming is that there will soon be a great shortage of meat supplies. Save your breeding stock. They are today Canada's most valuable asset. If you sacrifice your breeding stock now, you will regret it in the near future.

Plan to increase your live stock. Europe and the United States, as well as Canada, will pay higher prices for beef, mutton, and bacon in the very near future. Remember that live stock is the only true basis of economic and profitable farming. The more grain you grow, the more stock you can carry. The more stock you keep, the more fertilizer for your fields. Mixed farming is real farming, not speculating.

BEEF. In ten years the population of Canada increased 34 per cent. while the number of cattle increased only 17. Moreover, the city and town population, which may be locked upon as essentially the consuming element, increased by 62.2 per cent. while the rural population, or the producing element, increased by only 17 per cent.

Study carefully the adjoining table which was prepared before the war. What does it mean?

Only one of these countries increased its cattle more than its people in the past ten years. And, in it (Australia) in 1914 there was a tremendous loss of live stock through an unprecedented drought—a fact which the table does not show. Do you need any stronger argument than

Country	Population Increase Since 1900	Cattle Increase Since 1900
France	31%	2%
Germany	18%	4%
United Kingdom	10%	4%
Austria-Hungary	10%	3%
European Russia	14%	13%
Canada	34%	17%
Argentina	40%	6%
Australia	18%	40%
New Zealand	20%	18%
United States	24%	30%

this table that there is bound to be an increasing demand for beef? Add to this condition, the destruction of live stock of all kinds, breeding stock and young stock included, in the several war zones.

Beef is the most important item in the British soldier's rations. He is allowed 1½ lbs. of this every day. The daily demand for meat by the British, French and German soldiers is enormous.

The war has merely hastened the most shortage of the world. When it is over, the farmer with live stock will continue to profit in the world's markets, and, in addition to having helped feed our soldiers at the front, will be in a position to reap a further reward for having stayed with the live stock industry.

Sheep, Swine, Horses, Dairy Produce

SHEEP. Canadian farmers have been losing great opportunities in sheep raising and sheep feeding. The demand for wool is increasing. Hundreds of thousands of sheep have been slaughtered to provide winter clothing for the soldiers of the different armies. Australia's losses, through drought, in 1914, were very heavy. Canada has been importing frozen mutton from New Zealand. In view of these conditions, wool and mutton should prove very profitable for Canadian sheep raisers during the next few years.

SWINE. Through the indiscriminate sale of swine in the Canadian West in the past three months, the supply in 1916 promises to be little more than half of 1914. Add to this the fact, that the British soldier is allowed 1½ lb. of bacon per day, and that sausage is the principal meat food of the German soldier, and you will understand the outlook for the future. Those who stay steadily with swine, year in and year out, make money. Those who rush in and rush out

generally lose money. "Buy when others are selling, sell when others are buying," applies to live stock as well as to Wall Street stocks.

HORSES. The wastage of horses during the war has been enormous. The estimated life, at the front, of the cavalry horse is seven days, of the artillery horse thirty days. It is true the loss has been among light horses for which there has been a declining demand in recent years. But with thousands of such animals sent from this country, the tendency will be to liven up the whole horse industry. The demand of the future will be for high-grade animals and farmers should be more careful than ever in breeding. Use only stallions enrolled and inspected under your Provincial Enrolment Act.

DAIRY. Milch cows increased in Canada from 2,408,677 in 1901 to 2,594,179 in 1911. This increase did not amount to 8%, and was less than one-quarter of the population increase of Canada. At the same time, the per capita consumption of milk

by Canadians increased 30%, is there any wonder we had to import 7,000,000 lbs. of butter from New Zealand?

The exports of Canadian cheese have been steadily declining for ten years. Look at the market prices today. Do they not suggest the advantage of increased production?

Through cow-testing, selection, and better feeding, the average annual production per cow in Canada did increase from 2,850 lbs. per cow in 1901 to 3,805 lbs. in 1911, but this is only a beginning. Last year one cow in Canada produced 26,000 lbs.

The dairymen of Denmark who supply Great Britain with butter and bacon are not satisfied unless their herds average 10,000 lbs. per cow. Let Canadian dairymen work to increase the productiveness of the milch cow. Breed for milk. Test your cows. Save your calves. Select your milkers. Feed for yield. Read the Agricultural articles in the daily and weekly press and in the Agricultural papers, and the Government bulletins on dairying.

**Canadian
Department of
Agriculture,
Ottawa, Canada**

No Postage Required.

Publications Branch, Canadian Department of Agriculture, Ottawa.
Please send me Bulletins on Dairying, Cattle, Sheep, Swine, Horses.
Mark out Bulletins you do NOT want.

Name _____

P.O. Address _____

County _____

Prov. _____

PRODUCTION is PATRIOTISM**Back Yards and Vacant Lots****THE EMPIRE'S CALL TO FEED YOURSELVES**

The farmers are responding in their thousands to the call of the Empire for greater production. They have realized that every bushel raised means a bushel more for export to Britain: that this is one way of displaying patriotism. With favorable weather, Canada's crops this year will be the greatest in her history; far greater than any of us thought possible a year ago.

Now, to round out the scheme requires equally patriotic action in the towns and cities. The people of every community, large and small, should make vacant lots and back yards productive by raising their own vegetables and garden stuff. Every pound raised, remember, is another pound furnished toward Britain's needs.

Send for the Government Bulletin

This Department will forward free a special bulletin entitled "The Vegetable Garden." The simple instructions are easy to follow and make success practically certain, even to those without experience. The best methods of cultivation for the following vegetables are fully described: Tomatoes, Onions, Cabbage, Cauliflower, Celery, Melons, Watermelons, Cucumbers, Squash, Pumpkins, Carrots, Parsnips, Beets, Turnips, Salsify (or Oyster Plant), Radish, Peas, Beans, Corn, Egg Plant, Peppers, Spinach, Lettuce, Parsley, Sweet Herbs, Asparagus, Rhubarb.

You will enjoy amateur gardening, and profit in health and pocket as well. Children are immensely benefited, get a liberal education in the most practical manner, have outdoor amusement away from the street, become the possessors of rich red blood, strong lungs, alert minds.

Identify yourself with the national movement. Be a grower. Send for the bulletin and get your neighbors to do the same; everybody will benefit by the friendly rivalry thus started. No stamp is required on your envelope, for your coupon is truly "On His Majesty's Service."

What Local Civic Bodies Can Do

City and town councils, boards of trade, charitable bodies, women's clubs, horticultural societies, civic improvement leagues and other organizations working for the common good can accomplish a great deal locally by identifying themselves with the movement and energetically furthering it by every means at their disposal.

It will mean a thorough and permanent clean-up without cost to the community, a partial solution of the unemployed problem, and

the institution of a genuine up-lift work. Vegetables and flowers will make better citizens.

This Department has formulated a plan telling how the various civic organizations may be brought together to further this worthy aim, and giving suggestions how to launch and carry on the work to a successful issue. Write at once for the form of organization and get your community properly started in performing its share of "Greater Production."

**Canadian
Department
of
Agriculture,
Ottawa, Can.**

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Please send me Bulletin entitled "The Vegetable
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PATRIOTISM and PRODUCTION

Great Britain Short 100,000,000 dozen Eggs

From present indications, Great Britain will need 100,000,000 dozen eggs this year to make good the shortage caused by the cutting off of her usual European supplies. How long this shortage will continue after the present year, or how long the war will last, it is impossible to say, but it is reasonable to suppose the demand will continue for some time.

Canada should welcome this exceptional opportunity of gaining access to the British egg market. Every precaution should be taken to supply as high a quality as possible in order to obtain a place similar to that held by Denmark and the Netherlands in the egg trade of the United Kingdom.

Tremendous Possibilities

There are tremendous possibilities for poultry development in Canada. In fact, Canada had to import last year \$2,500,000 worth of eggs more than she exported. In other words, Canada needs 1,500,000 more hens, averaging 100 eggs per year, to meet the shortage in the home market.

The average egg yield per hen per year in Canada is but 80 eggs, which is very low. If every hen at present in Canada, could be induced to lay one dozen more eggs per year, it would mean an increased production of 40,000,000 dozen eggs or from \$8,000,000 to \$10,000,000.

There is no reason why the average egg yield per hen could not in a few years be brought up to 150 eggs a year. Intelligent management would do it.

Raise pure-bred poultry. It does not cost any more to raise, feed, and care for pure-bred fowls, and they yield a greater profit.

Start your hatching operations early in the year. The early hatched pullet is the one that begins to lay

early in the fall when eggs are high in price.

In order to obtain eggs, it is necessary to have healthy, vigorous birds. To be egg-machines they must have vigorous constitutions. They must have proper food, too, and lots of exercise.

Weed out your old hens, unless exceptionally good breeders. If possible, use the pullets, that lay in the fall, in the breeding pen the following spring. Breed to lay, and feed to lay. It is eggs, eggs, and more eggs that Canada and the Empire need, and will continue to need.

Even if you are a highly efficient poultryman, there is undoubtedly information of interest and value to you in the Bulletins on poultry and egg production issued by the Canadian Department of Agriculture, and your Provincial Department. Write for them. Tell your neighbor poultryman to send for them. Get together and discuss the poultry and egg situation. Plan to increase poultry production throughout the Dominion. Work to help Canada and the Empire to the best of your ability in this crisis.

**Canadian Department
Of Agriculture
Ottawa, Canada**

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF HORTICULTURE

*GROWING POTATOES FOR HOME AND MARKET

BY W. T. MACOUN, DOMINION HORTICULTURIST

WHEN the farmer sows or plants his seed his object should be to get the largest return from the soil. This can be obtained only by the use of good seed and by thorough cultivation; and there is no farm crop the yield of which can be increased so much by these methods as the potato. Potatoes have been grown in a small plot at the rate of over 700 bushels per acre at the Central Experimental Farm, Ottawa, Canada, but so great is the difference in the yield of varieties that while one gave this large yield, another, planted at the same time and in the same kind of soil, yielded only 154 bushels. It will thus be seen how important it is to plant a productive variety.

VARIETIES AND SOURCE OF SEED

A variety which is productive in one place may not be productive in another. In some places the season is too short for the later varieties, and as a result the crop is small. A variety which at one time did well in a certain locality may become

unprofitable through being diseased or becoming weak in vitality owing to unfavourable seasons. In such a case a change of seed is very desirable. As showing the advantage of a change of seed, it may be stated that new seed potatoes of eleven varieties from the Experimental Farm, Indian Head, Sask., grown at the Central Experimental Farm, Ottawa, yielded on the average at the rate of 368 bushels per acre, while seed potatoes of the same varieties which had been weakened in vitality at Ottawa by unfavourable seasons averaged only 97 bushels per acre. Other striking results could be given from seed from other provinces. Seed from the cooler and moister districts usually gives better crops the following year than seed from the warmer and drier ones. Potatoes which are immature when dug will usually give better crops the following year than potatoes which have been either prematurely ripened by hot, dry weather or even that are well ripened normally. It pays to import seed from cooler to warmer climates, as has been learned from experience. Some of the most reliable early vari-

*From Agricultural War Book.

ties are Irish Cobbler, Rochester Rose and Early Ohio, and of medium or later varieties, Carman No. 1, Gold Coin, Empire State, Green Mountain and Wee MacGregor. British varieties which have done exceptionally well in Canada are Table Talk and Davies' Warrior.

CONDITION OF SEED WHEN PLANTED

The condition the potatoes are in when the time for planting arrives is very important. If possible, potatoes should be prevented from sprouting before they are planted, unless sprouted in the light as described later on; and to prevent sprouting it is desirable to keep them in a cool cellar where the temperature does not go much above 35 degrees F. nor below 33 degrees F. The cooler potatoes are kept without freezing the better. When potatoes are kept in a warm, moist cellar, as they so often are, they sprout and the shoots take from the tubers both plant food and moisture, and as these sprouts are usually broken when handling the potatoes, the new shoots which are made when the potato starts to grow in the field have less moisture and less plant food to draw upon, and do not make as vigorous a growth as they otherwise would, and the yield is smaller. The best results will be obtained if the sets are planted immediately after cutting but if the seed is prepared several days beforehand it will pay well to coat the sets with land plaster or gypsum which will prevent evaporation. The seed potatoes should be free from disease. When potatoes are affected with the "Rhizoctonia" or "Little Potato" disease or the "Common Scab" the following treatment is recommended before the potatoes are cut or planted:—Soak the tubers for three hours in a 1 to 2000 solution of bichloride of mercury (corrosive sublimate) or in 1 pound formalin in 30 imperial gallons of water. As the former chemical is very poisonous and will corrode iron

vessels, wooden barrels or tubs should be used. Formalin is not so poisonous but should be used with care.

KINDS OF SETS TO USE

Many experiments have been tried to determine the best kinds of sets to plant, and on the average it has been found that good marketable tubers cut into pieces so as to have at least three good eyes to a piece are the best. If cut sets are found to dry up after planting, use whole potatoes for seed. It has been found to be a great advantage to "sprout" potatoes in order to have the tubers ready for use earlier than when treated in the ordinary way, and where the season is short to obtain large crops. Medium sized potatoes are selected before they have begun to sprout and placed in single layers in shallow boxes or trays, with the seed end up. The boxes are then put in a bright, airy, cool place where the temperature is low enough to prevent sprouting. After a few days the potatoes will turn green and the skin become tougher. The potatoes are now given a little more heat, but still kept in a bright place. From the seed end will now develop two or three strong sprouts, and the meaning of exposing the potatoes at first to toughen the skin is now apparent, for most of the eyes do not sprout, and practically the whole strength of the potato is concentrated in the few sprouts at the end. This is what is desired, as the fewer sprouts there are the larger proportion of marketable potatoes there will be in the crop from them. The potatoes are planted whole. If the potatoes are given plenty of light and the place where they are kept fairly cool, the sprouts will become very sturdy and strongly attached to the tuber, and will not be broken off in handling, unless very carelessly used. Tubers will develop more quickly from sprouts made slowly in a bright, cool place than from sprouts which have grown rapidly in a dark place, and, furthermore, the

yields will be much heavier. Potatoes which sprout in the dark are very difficult to handle as the sprouts break off very easily. It is not absolutely necessary to place the potatoes with the seed ends up, as very satisfactory results are obtained even when potatoes are emptied indiscriminately into shallow boxes or trays and then treated as already described. The sprout should be about two inches in length at time of planting. If longer the sets are more difficult to handle.

SOIL

The most suitable soil for potatoes is a rich, deep, friable, warm sandy loam with good natural drainage, a constant though not too great a supply of moisture, and well supplied with decayed or decaying vegetable matter. They will, however, succeed well on a great variety of soils. The warmest and best drained soils that can be obtained should be chosen for the early potatoes, and the sets in this case should be planted shallow, so that they will get the advantage of the heat from the surface soil.

PREPARATION OF THE SOIL

The more thoroughly the soil is prepared the better the results will be. Loose, well pulverised soil is particularly desirable for potatoes. While heavy manuring with barnyard manure is not recommended for potatoes, the use of a moderate quantity is advised. A good way to apply this is on clover sod in autumn; the sod and manure to be turned under in the spring. If manure is used in the spring it should be well rotted and mixed with the soil, not put in the drills with the potatoes. Chemical fertilizers, if used, should be applied at the rate of 500 to 800 pounds or more per acre, in the proportion of 250 pounds of nitrate of soda, 350 pounds superphosphate, and 200 pounds sulphate of potash or muriate of potash per acre. This should be mixed with the soil in the drills.

PLANTING

As a slight frost will injure the tops, planting should be delayed to within a week of the time when the last frost is likely to occur, but in some districts potatoes may be planted later than in others. Where extra early potatoes are desired chances are taken and potatoes are planted earlier; and, should a frost threaten, the young plants, if they are above the ground, may be protected by covering them with soil. The best results have been obtained in Canada by planting the potato sets four to five inches deep for the main crop, and twelve to fourteen inches apart in rows two and one-half feet apart. As has already been stated, potatoes planted early, or if planted in soil which is too wet and cold for best results, may be planted shallower, say an inch deep, where the soil is warmer than it is further down. The sets should be covered as soon as possible after planting, so that they will not dry in the sun.

CULTIVATION

In field culture much time will be saved in hoeing later in the season if the soil is harrowed, to destroy weeds, just as the potatoes are beginning to come up, and at this time many weeds will have germinated. If the potatoes are in a garden it may be raked over for the same purpose. As a rule, the crop of potatoes will increase in proportion to the number of times the potatoes are cultivated during the growing season. There was found to be an increase of 40 bushels per acre in a crop of potatoes cultivated six times over those cultivated three times. Level cultivation will sometimes give better results than moulding or hilling up, and sometimes the results are not so good. Where the soil is stiff, or where the soil is wet, moulding, or ridging, is desirable but where the soil is loose and liable to suffer from drought in a dry time, level culture is recommended. Where the soil is both loose and moist and

where the climate is moist, ridging will usually give best results. As the crop of potatoes will be much larger if the tops can be kept green until frost than if they are destroyed by insects or diseases in summer, it is important, in addition to thorough cultivation, to protect the tops from injury.

PROTECTION OF PLANTS FROM INSECTS AND DISEASES

The Colorado potato beetle and the cucumber flea beetle are the commonest insects which injure the potato tops. The former can be readily killed with Paris green in the proportion of 8 ounces to 12 ounces to a forty gallon barrel of water, or with arsenate of lead in the proportion of 2 to 3 pounds to 40 gallons of water. Paris green kills quicker than arsenate of lead but the latter adheres better than Paris green, hence a mixture of both in the proportion of 8 ounces of Paris green and $1\frac{1}{2}$ pounds of arsenate of lead to 40 gallons of water will kill quickly and adhere well to the foliage. These poisons will, to some extent, check the cucumber flea beetle, but in addition to them, a better preventive is a covering of Bordeaux mixture on the foliage. The Bordeaux mixture should also be used to control the early and late blights of potatoes, the latter disease causing rot. These are two of the commonest diseases. To control the early and late blight of potatoes spraying with Bordeaux mixture should be begun before the disease appears and the plants kept covered until autumn. It is safer to start spraying with Bordeaux mixture when spraying

for the potato beetles. The poison of the latter may be mixed with the Bordeaux. From three to four sprayings or more will be required, the number depending on the weather. Taking the average of three years, the increase of yield from spraying with Bordeaux mixture was at the rate of 94 bushels per acre. In some years it is much larger. The importance of keeping plants growing as late as possible is well illustrated in an experiment where the total crop of marketable potatoes per acre when dug on September 1st was 234 bushels per acre, whereas in the same field the same variety yielded 353 bushels marketable potatoes per acre when left undug until September 22nd, or in three weeks the crop had increased by 119 bushels per acre of marketable potatoes. Bordeaux mixture is made in the proportion of 6 pounds bluestone, 4 pounds lime and 40 gallons of water. Spraying mixtures should be used at the proper time and thoroughly, if good results are to be expected.

DIGGING AND STORING

Potatoes should be dug in dry weather, so that they will be dry when they are taken into the cellar. If they are diseased, the disease will not spread so rapidly among dry potatoes. If the potatoes are known to be diseased in the field, it is best to leave them in the ground as long as possible, so that diseased potatoes may more readily be seen and separated from sound ones before they are taken into the cellar. Potatoes should be stored for best results in a dry, cool, well ventilated cellar and kept at a temperature between 33 degrees F. and 35 degrees F., if possible.

Dr. F. Torrance, Veterinary Director General, announces that the Department of Agriculture is now in a position to favourably consider the issuing of permits for the importation of cattle, sheep and swine from any part of the United Kingdom.

THE DIVISION OF BOTANY

THE CONTROL OF POTATO DISEASES

BY H. T. GUSSOW, DOMINION BOTANIST

IT is a difficult matter to give an actual estimate of the annual losses for the Dominion due to plant diseases affecting the potato crop. Judging from the considerable number of cases, the total loss must be enormous in some years particularly.

The loss from the so-called "storage rots" amounted in some cases to 40 per cent. The yield, owing to the use of diseased seed, as far as can be judged from "misses" in the fields, has been occasionally reduced by some 30 per cent, and diseases affecting the growing plant may also cause considerable damage to the crop.

In order to prevent such loss and make the cultivation of potatoes more profitable, it is necessary to strictly follow certain lines laid down for the elimination of diseases, when it is reasonable to expect that the diseases will be eventually exterminated or reduced to a minimum. Any objections a farmer may have to carrying out the following suggestions will disappear when he finds from experience that their observance results in a greatly increased yield and higher profits to himself.

THE DISEASES OF THE SEED TUBER

1. The presence of powdery scab shall disqualify any lot of potatoes for seed purposes. Powdery scab occurs in the Maritime Provinces; no cases of this disease have been observed west of the province of Quebec. In order to prevent the dissemination of this disease, all potatoes grown in the "infested area" are being officially inspected and certified before shipment.

2. Potatoes entirely free from all diseases or blemishes are the ideal potatoes for seed purposes.

3. When selecting potatoes for planting, all bruised, decayed, externally diseased or unsound tubers should be removed.

4. Tubers showing common scab should, preferably, be all removed. The chances are that scabby seed will produce a scabby crop.

5. After having removed all externally diseased and otherwise injured tubers, the seed should be soaked in bags or bulk for three hours in a solution of bichloride of mercury, 1 part in 2,000 parts of water. After treatment, spread out and dry.

6. When dry, cutting the potatoes for "sets" will commence. Provide each person engaged with a potato knife, and keep a number of knives in a wooden pail containing a solution of 1:1,000 bichloride of mercury.

7. The stem end of the tuber is the seat of several internal diseases. Cut a thin slice off the stem end of each potato; if perfectly sound and free from brown streaks, rings or spots, continue cutting it up to required size.

8. Discard at once all tubers showing discolouration, when cut as above, at the stem end, and throw out those showing any kind of spotting inside, though the stem end itself may have shown no disease.

9. Having used the knife on a tuber showing any kind of discolouration inside, throw it at once into the disinfecting solution, and take out another knife before cutting up a new tuber. A knife that has cut through a diseased tuber conveys certain diseases to the new tuber, hence it is very important to change the knife after having thrown out a diseased tuber. It is waste of time to cut out brown spots and use the rest of the tuber.

After following these precautions, everything has been done to eliminate diseases conveyed by unsound seed potatoes. The sets are now ready for planting.

DISEASE-INFECTED LAND

In the case of powdery scab and a number of other potato diseases, the causal organism persists in the soil for a number of years; it is, therefore, necessary to avoid too frequent succession of potato crops. Ordinarily, potatoes should not be grown oftener on the same land than every fourth year. Where powdery scab has existed, it is advisable to change to land that has not previously produced a diseased crop of potatoes. The infected land may be used for any other crop with the exception of potatoes.

THE DISEASES OF THE GROWING PLANT

The recognition of diseases noticeable only in the growing plant will invariably be most difficult. Where doubt exists, a specimen showing the suspected trouble should be mailed to the Dominion Botanist for his advice, but, generally speaking, careful attention to the elimination of disease in the seed tubers will have largely reduced the disease affecting the growing plant. Farmers should make it a rule to immediately remove any individual hill that may show signs of yellowing, curling-up of leaves or otherwise feeble growth, as well as any individual plant with flowers of a different colour from the rest, in order to keep varieties pure.

SPRAYING

1. Spraying is practised for two main reasons: First, to control the Colorado beetle; and, second, to

control Late Blight. There are other minor reasons.

2. Experiments have shown that several solutions will destroy the Colorado beetle, but the solution acting most rapidly is the one to use.

3. Spraying must be done thoroughly. All plants, and all parts thereof, must be well covered. A plant with one half sprayed and the other half missed will have the unsprayed part eaten off by the beetles very quickly. This will leave enough beetles to continue the pest. One spray thoroughly applied is better than several carelessly applied.

4. We recommend two special applications for beetles; one when the plants are from four to six inches high, to be followed by another from one to two weeks later. The interval between the sprays will naturally vary according to the severity of attack. The solution we use and recommend is made up as follows:

Eight to 10 ounces of Paris green, $1\frac{1}{2}$ to 2 pounds arsenate of lead to 40 imperial gallons of water.

This solution adheres satisfactorily to the foliage and controls the ravages of the beetle. Spraying will generally commence towards the 1st of July.

5. After the first two applications have been made, we continue spraying regularly once every two weeks right up to harvest time, using "poisonous" Bordeaux mixture of the following composition:--

Four pounds of lime or more, if necessary; 6 pounds sulphate of copper, 12 ounces Paris green, 40 imperial gallons of water.

6. Do not spray on very windy days. Spray early in the morning, or commence two hours before sunset. Postpone spraying in unsettled weather, but spray thoroughly, particularly after a period of rain.

EDUCATION AS AN AID IN THE CONTROL OF PLANT DISEASES

BY W. A. MCCUBBIN, FIELD LABORATORY OF PLANT PATHOLOGY, ST. CATHERINES, ONT

IN the course of two years' association with the work of plant diseases in the Niagara peninsula, and southern Ontario, it has become increasingly apparent that, aside from the small percentage of farmers who have attended agricultural colleges, there are comparatively few who have an adequate knowledge of the nature of the diseases which affect their crops. Even where control measures are practised, there is often haziness and misconception as to the cause of the trouble; whereas with a more definite knowledge of the principles of disease, such measures could be carried out in a more intelligent and satisfactory manner. With a view to supplying this lack, and to give an accurate if limited knowledge of the fundamental features concerned in diseases, a series of addresses was arranged to be given during the winter. Each lecture was well illustrated with lantern slides, some sixty of which had been prepared for the purpose in the field laboratory at St. Catharines.

In these addresses a distinction was drawn between the diseases caused by parasites and those injuries arising from the action of physical, chemical, or climatic agencies. Attention was also directed to the obscure and little known troubles usually classed as physiological diseases. In regard to parasitic diseases, use was made of numerous

illustrations to present a clear picture of the important phases in the life history of a fungus. The minute size and vast number of the spores of fungi were estimated by simple calculations, and the means by which these spores are disseminated were pointed out. Then the problem of infection was dealt with, especially in reference to those factors which favour or limit infection. In order to present a general view of diseases, a series of slides of various types of parasitic diseases were shown, as well as a number illustrative of physiological diseases and injuries due to external causes. When time permitted, the methods employed in controlling diseases were discussed and questions answered concerning these.

During the winter such addresses were given to twelve agricultural classes in various counties; to three meetings of farmers' institutes; to a special audience of fruit growers and farmers in St. Catharines; to the Lincoln county teachers' convention; to the science students of the St. Catharines collegiate; to the scholars and ratepayers of three schools in Lincoln county, and to a men's club of St. Catharines.

The attention and interest shown in these addresses have been a great encouragement in this work, and it is hoped to have them continued and extended during the coming winter.

THE DIVISION OF APICULTURE

THE BEE KEEPING SITUATION IN CANADA

BY F. W. L. SLADEN, APIARIST, EXPERIMENTAL FARMS SYSTEM

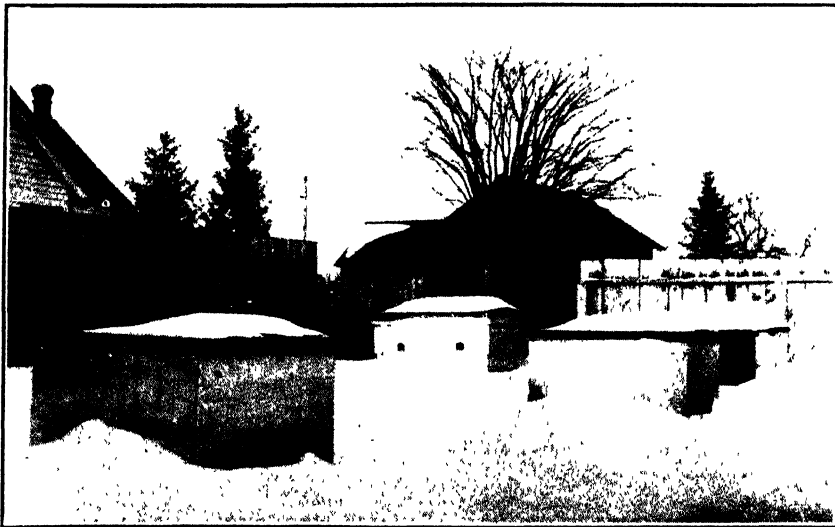
THE present deplorable war has had the effect of increasing the value of certain staple articles of food and reducing the

value of certain luxuries. Honey being something between a necessity and a luxury has not been much affected in price by war conditions,

though it has been affected by the price of other things and the usual fluctuating market. At the present time, owing to the poor honey crop in Ontario in 1914 and the abnormally high price of sugar, the price of honey is good and it behooves every beekeeper to do his utmost to produce a large crop of honey in 1915. With proper distribution the demand for extracted honey in Canada is excellent, but the demand for comb honey, which is more of a luxury, is limited. With a given number of bees about double as much extracted

the honey can be kept good in such a package for any reasonable length of time if stored in a dry place.

It is, in a sense, regrettable that in the temperate region of North America, owing partly to the superior quality of the honey produced and the high cost of living, the cost of honey is higher than elsewhere, because this, with the duty on honey entering Canada (3 cents per lb., and 7½ per cent ad valorem from the United States, etc., and 2 cents per lb. with 5 per cent ad valorem from countries enjoying the British



WINTERING BEES OUT-OF-DOORS AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, IN CASES HOLDING FOUR HIVES EACH AND PACKED WITH PLANER SHAVINGS.

honey as comb honey can be produced, and the production of extracted honey is easier because swarming can be more readily controlled. It will, therefore, be seen that it generally pays better to produce extracted honey than comb honey, and the present conditions somewhat accentuate this dictum. The best package for extracted honey in commercial quantities is the 5 lb. and 10 lb. tin honey "pail." The cost of this package is much less than that of glass jars in comparison with the value of the honey content, and

preferential tariff) makes the price of honey in Canada so high that it practically prohibits the exportation of Canadian honey. Nevertheless these conditions make intelligent beekeeping very profitable in good regions and seasons.

Among the great variety of grades of honey produced in Canada two may be singled out: (1) clover honey produced from white Dutch clover (*Trifolium repens*) and alsike clover (*T. hybridum*), plants which grow abundantly, wild and cultivated, in all the farming regions of

Canada excepting the drier portions of the prairies, and (2) fire-weed (*Epilobium angustifolium*) honey gathered from the great willow herb or fireweed, a common weed in forest clearings, especially after devastation by fire, and often abundant in certain places in the north. Up to the present time clover honey has been by far the most important commercial product and its quality in the opinion of most consumers is unexcelled, but its production is rendered uncertain from year to year by drought and other causes. On the

make beekeeping in Canada a very profitable industry and it might be engaged in very much more than it is at present. The outcry about a slight fall in price by some of the extensive beekeepers in Ontario when a large crop of clover honey is harvested is hardly well founded, for the markets in the Prairie Provinces are large and growing, and honey has a ready sale in all villages everywhere if put up cleanly in neat packages. Besides, extracted honey will keep properly stored, from year to year, without deterioration. It is only by



APIARY AT THE DOMINION EXPERIMENTAL STATION, STE. ANNE
DE LA POCATIÈRE.

other hand, fireweed honey, though somewhat insipid in flavour, is little affected by weather conditions and enormous crops of it have been harvested in apiaries situated where much fireweed grows. A maximum of 500 lb. of honey, mainly from this source, was taken from one hive in the bush twenty miles north of Maniwaki, P.Q., in 1914.

In general it may be said that the abundance of nectar producing flowers, the long summer season, the usually sufficient rainfall and the comparatively high price of honey

an abundant display of honey in our stores that the present demand for it will continue and increase.

The three principal problems in beekeeping:—swarming, disease and wintering, are all capable of successful solution with care, and what is most needed at present is intelligent and careful methods of beekeeping. Our public schools are turning out men and women that will read our publications and make use of the information contained therein, decimation by disease is, in some districts, eliminating the neglectful keeper of

bees in old-fashioned box-hives, and the Provincial Governments, have and are doing good educational work through their bee-diseases inspectors, appointed through the bee disease

laws that have been passed in most of the provinces. Mention should also be made of the beekeepers' associations, some of which are showing much activity and usefulness.

THE FRUIT BRANCH

MARKETING THE PEACH CROP

BY C. W. BAXTER, CHIEF FRUIT INSPECTOR FOR EASTERN ONTARIO AND QUEBEC

OWING to the increased planting of peach trees in Ontario during the past few years, many of which will come into bearing this season, and owing to the anticipated large yield from the older trees, it is expected that the 1915 peach crop will be large.

The killing of the peach buds during the winter of 1913-14 was followed by an excellent growing season. The result was that the trees went into last winter under ideal conditions and with a large increase in the number of fruit spurs. Reports received up to date show that the trees have wintered well. There has been no killing of the buds by frost and should nothing of a serious nature occur it is reasonable to predict a crop which will be the largest in the history of Canada.

The peach growers of Ontario experienced difficulties in marketing the large crop of 1913 and many marketed their fruit at a loss. It is necessary, on account of the very perishable nature of peaches, that the crop be moved quickly and it is obvious that some provision be made to obtain a wider and more systematic distribution if the difficulties experienced in 1913 are to be avoided in 1915.

With this object in view, the writer was instructed by Mr. D. Johnson, Dominion Fruit Commissioner, to visit the peach growing sections in the state of Georgia, to enquire into the methods employed in marketing Georgia peaches and to

secure any other information which might be applicable and of value to fruit growers in Canada.

Although much has been accomplished by co-operative associations, and although some individual efforts have proved successful, yet there is not to-day in eastern Canada a central organization specially engaged in marketing tender fruits. When the peach crop is heavy, the large consuming centres are usually flooded with fruit, which means ruinous prices to the grower. At the same time many of the smaller towns and villages are paying such high prices that the consumption is materially lessened.

To successfully market a large crop of peaches it is necessary to make an early estimate of the total crop, to employ methods which will increase consumption and to take the necessary steps to secure a wide and even distribution. The Georgia Fruit Exchange has accomplished these and other things for the peach growers of that state. This organization is an incorporated body organized primarily for the purpose of selling and marketing fruit and vegetables, but, owing to the great increase in the production of peaches during the past few years, efforts are now practically confined to the marketing of that fruit.

In 1910 the Georgia Fruit Exchange marketed in only 80 cities. In 1914 this number was increased to 197. Previous to this extension of markets over 80 per cent of the total

crop was shipped to three centres, which were overstocked, little or no profit was returned to the producers.

In 1914 the same organization handled 68 per cent of the total crop. The fact that 197 cities and towns were supplied, enabled individual shippers to obtain much better prices at the same three centres mentioned above. For example, 29 per cent of the total crop was shipped to New York City. Of these shipments only 18 per cent were made by the Exchange and 52 per cent by individual shippers. Forty-three per cent of the total crop was shipped to three other

cities, and of this fruit 28 per cent was shipped by the Exchange and 76 per cent by private individuals.

Wider distribution is essential in the marketing of the Canadian peach crop. It will result in better prices for the producer and will be a guarantee of lower prices to the consumers, as a whole.

A pamphlet dealing with the marketing of peaches in Georgia will shortly be issued by the Fruit Commissioner's Branch, and will be mailed free to any grower requesting same.

NOTES

While in eastern Canada during the early part of the year, Mr. A. H. Flack, Chief Fruit Inspector for the Prairie Provinces, gave demonstrations in the box-packing of apples at Truro, Berwick, Port Williams, Middleton and Kentville in Nova Scotia, Woodstock in New Brunswick and La Trappe in Quebec.

Following this series of meetings Mr. Flack went to Ontario where he assisted Mr. P. J. Carey, Dominion apple packing expert, at similar demonstrations in box and barrel packing at the following points: — Forest (February 9-13), Trenton

(February 15), Wellington (February 16), Bowmanville (February 17), and Goderich (February 18 and 19).

All the meetings were well attended and much interest was shown by those present.

Mr. P. J. Carey has also given demonstrations in orchard management, box and barrel packing, at the following places in Ontario:—Simcoe (February 22 and 23), Ancaster (February 24), Waterdown (February 25), and Strathroy (February 26).

A better method in seed selection would mean millions of dollars in the increase of production.—*Prof. C. A. Zavitz.*

THE ENTOMOLOGICAL BRANCH

THE CONTROL OF CUTWORMS

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST, IN CHARGE OF VEGETABLE, STORED PRODUCTS AND GREENHOUSE INSECT INVESTIGATIONS

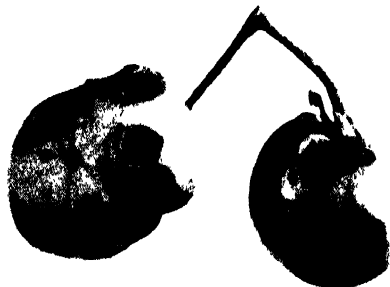
DURING the months of May and June remedies for the various destructive species of cutworms are urgently requested by farmers, market gardeners, fruit growers, etc. Many of our common cutworms pass the winter in a partially grown condition and in spring as soon as young seedling plants appear above ground or when such

THE RED-BACKED CUTWORM, *EUXOA*
OCHROGASTER—ENLARGED ONE-
QUARTER. (Original).

plants as cabbages and cauliflowers are transplanted in the field, many are cut or eaten off near the surface of the ground, or a little below it. In many instances the young plant will be found to have been drawn partly into the ground. Not all cutworms, however, feed in this manner; some climb up fruit trees or such plants as currants, gooseberries, tomatoes, etc., and feed upon the foliage or the fruit. In fact, when they are excessively abundant they will attack anything green and juicy. In years of abundance some kinds, such as the Variegated cutworm, the Spotted cutworm, and the Black Army cutworm, assume the marching habit, so characteristic of the true Army-worm.

The poisoned bran remedy is the one which is now used most extensively for the destruction of cutworms generally. This is made by moistening the bran with sweetened water and then dusting in Paris green in the proportion of half a

pound of Paris green to fifty pounds of bran. It is important that the bran be noticeably moistened (but not made into a mash or moistened too much to prevent its being crumbled through the fingers) so that when the poison is added, it will adhere to practically every particle. Two gallons of water, in which half a pound of sugar has been dissolved, is sufficient to moisten fifty pounds of bran. If more convenient, the same quantity of salt may be used instead of sugar, or even molasses may be employed. The mixture should be applied thinly as soon as cutworm injury is noticed. It is important, too, that the mixture be scattered after sundown, so that it will be in the very best condition when the cutworms come out to feed at night. This material is very attractive to them and when they crawl about in search of food they will actually eat it in preference to



YOUNG TOMATOES DESTROYED BY THE
VARIEGATED CUTWORM, *PERIDROMA*
SAUCIA. (Original).

the growing vegetation. If the mixture is put out during a warm day, it soon becomes dry and is not, of course, as attractive to the cutworms. In treating fields of hoed crops, such

as beets, turnips, etc., a simple method is to have a sack filled with the bran, hung about the neck and by walking between two rows, and using both hands, the mixture may be scattered along the row on either side. When cutworms are so numerous as to assume the walking habit, the poisoned bran may be spread just ahead of their line of march. In gardens, where vegetables or



TOPS OF GLADIOLI SHOWING HABIT OF CUTWORMS IN CUTTING OFF YOUNG PLANTS, AND ALSO INJURY TO TENDER LEAVES ABOVE GROUND. MANY FLOWERING PLANTS WERE DESTROYED IN THIS MANNER IN 1914. (Original).

flowering plants are to be protected, a small quantity of the material may be put around, but not touching each plant. Fruit trees may be protected from climbing cutworms in the same way, but the mixture should, of course, not be thrown in quantity against the base of the tree, otherwise injury may result from the possible

burning effect of the Paris green. As an instance of the remarkable effectiveness of the poisoned bran, I would mention that on one occasion when we used it to protect young tobacco plants on the Central Experimental Farm, we soon afterwards made careful counts of the dead cutworms near a number of the plants. Around one plant we found 17 dead cutworms, around another 8, around still another 9, and so on. Only one half of the tobacco plantation was treated. In the other half where no poisoned bran had been distributed, the cutworms were extremely destructive, very many plants being destroyed.

During 1914, the Kansas grasshopper formula was found of equal value in the destruction of the Variegated cutworm and it will undoubtedly prove a most useful remedy for other cutworms, particularly the surface-feeding kinds. This formula is as follows:

Bran	20 pounds.
Paris green	1 pound.
Molasses	2 quarts.
Oranges or lemons	3
Water	3½ gallons.

In preparing the bran mash mix the bran and Paris green thoroughly in a wash tub while dry. Squeeze the juice of the oranges or lemons into the water and chop the remaining pulp and the peel into fine bits and add them to the water. Dissolve the molasses in the water and wet the bran and poison with the mixture, stirring at the same time so as to dampen the mash thoroughly. In our experiments near Ottawa on the control of locusts the farmers prepared the mixture on the cement floor of a stable or other outhouse, stirring it thoroughly by means of an ordinary field hoe. The mixture should be broadcasted early in the evening. In the control of the Variegated cutworm in alfalfa fields in Kansas, the above quantity of bran was spread in such a manner as to treat about three acres. Scatter

the mixture thinly in places where it will reach the greatest number of cutworms, and when thus spread there is no danger of birds, poultry or live stock being poisoned.

Fresh bundles of any succulent weed, grass, clover, or other tender vegetation, which have been dipped into a strong solution of Paris green (one ounce of Paris green to a pail of water), may be placed at short dis-

tances apart in an infested field, or between rows of vegetables, or roots, and will attract many cutworms and protect the crops from further injury. These bundles, also, should be put out after sundown, so that the plants will not be too withered before the cutworms find them. As in the case of the poisoned bran, they should be applied just as soon as the presence of cutworms is detected.

THE HEALTH OF ANIMALS BRANCH

TUBERCULOSIS IN SWINE

BY F. TORRANCE, B.A., D.V.Sc., VETERINARY DIRECTOR GENERAL

THE loss from tuberculosis in swine is a serious one, involving not only a lessening in our food supply, but also a direct loss of money to almost everyone engaged in the hog industry. In the abattoirs under the inspection of the Health of Animals Branch of the Department of Agriculture, a careful record of all cases of tuberculosis in swine is kept. These records show that the disease is increasing in Canada, as the following figures indicate:-

PERCENTAGE OF SWINE AFFECTED WITH TUBERCULOSIS.

Year.	1910	1911	1912	1913	1914
Percent	8 90	11 60	12 69	13 41	13 72

In some parts of Canada the percentage is higher than in others, as for instance, —

	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
	1910	1911	1912	1913	1914
Essex Co.	16 28	21 41	21 49	26 72	28 00
Kent Co.	24 57	26 31	25 45	30 27	32 00
Ont Prov.	10 46	13 86	14 84	16 05	19 15

Every fourth or fifth hog affected with tuberculosis! Surely a state of affairs calling urgently for some attention. Fortunately for our food supply, the term "affected with tuberculosis" does not mean in every case that the hog is unfit for food.

Generally we find the disease in its early stages, and confined to one or two glands, and it is only necessary to condemn a portion of the carcass. For instance, the glands at the root of the tongue may be tuberculous, or the glands in the throat, and the rest of the carcass show no sign of disease; the head and tongue are condemned and the rest of the carcass is passed for food. But in spite of the fact that it is the exception to condemn the whole carcass, the number of portions condemned is so large, that the aggregate of the losses amounts to a large sum, estimated for the past year at \$173,671.88.

The packers have for some time been distributing this loss among the farmers by deducting one-half of one per cent from the purchase money of every lot of hogs they buy. This is justified on the ground that it is impossible to protect themselves against buying diseased hogs, as these can only be detected after slaughter, and as innocent purchasers, the packers should not have to stand the loss.

The farmer who has only healthy stock naturally objects to paying part of the loss on a neighbour's diseased pigs, and this arrangement

has caused some dissatisfaction. Much of this loss and annoyance could be avoided. Hogs can be protected from tuberculosis by simple measures that any farmer can adopt, and it is probably through not *knowing how*, that the spread of the disease has not been prevented.

If the way in which swine acquire the disease is known, and this source of infection is removed, the swine will remain healthy. How then do hogs become tuberculous?

Hogs acquire tuberculosis from cattle, especially from dairy cows. Tuberculosis is a common disease of cattle. Cows affected with it often give off the germs of the disease in the manure, and sometimes in the milk. Hogs feeding in yards or pastures with cattle have the opportunity of picking out grains of corn, etc., in the manure, and thus taking the germs of tuberculosis into the system. Skim milk and whey can easily convey the germs of the disease to hogs fed partly or wholly on dairy by-products.

These two facts account for practically all the tuberculosis of hogs. It is unlikely that it spreads to any extent from hog to hog. The

majority of the cases found on post-mortem examination at the abattoirs are in the early stage, showing that inspection has not reached the stage when the victim is dangerous to other hogs, or in fact capable of passing on the infection.

The practical application of this knowledge should result in keeping swine away from yards and pastures occupied by cattle, and in sterilizing all dairy by-products before feeding them to hogs. No scientific pasteurizing apparatus is required for this. Let the by-products be well boiled for a few minutes and all the protection needed is given. The trouble and expense of boiling skim milk for pigs would be repaid by the protection of their health, and as for allowing pigs to gather part of their food from the droppings of cattle, who would care to defend it?

In conclusion, I strongly advise farmers and hog raisers to keep their swine apart from cattle, and if skim milk or whey is used for feed, to have it well boiled. Tuberculosis of swine, if this advice were largely followed, would soon become much less frequent and losses would be prevented.

President W. J. Black of the Manitoba Agricultural College reports that over one hundred reeves and other municipal officers attended the lectures at the short course and convention on highway construction held in the auditorium of the College from March 3rd to 15th. Addresses were delivered by professors of the College, by the Provincial Highway Commissioner and the Minister of Public Works, by civic officials, by the president of the Manitoba Good Roads Association, by the State Engineer of Minnesota and by the Professor of Highway Engineering of Iowa State College. Those who attended were so well pleased with their experience that they passed a unanimous resolution requesting that a similar course and lectures be given next year.

Mr. W. E. Scott, Deputy Minister of Agriculture for British Columbia has issued a circular announcing that it has been decided to pay a bonus of five dollars to winners in the field crop competitions who submit a satisfactory statement of the cost of producing the crop entered for competition. This is in furtherance of the scheme to make a study of the sections of the province best adapted to certain crops.

PART II

Provincial Departments of Agriculture

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE, INCLUDING
AGRICULTURAL COLLEGES

POTATO GROWING

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THE potato crop of Prince Edward Island stands third in importance of field crops. Its average annual value for the last four years has been about \$1,800,000, the acreage about 32,000, the yield per acre a little over 200 bushels, and the price from 20 to 30 cents per bushel. The chief varieties grown for early market are Early Rose; Early Harvest; and Beauty of Hebron, and for general crop, McIntyre; Dakota Red, and Green Mountain.

The Island is particularly adapted to potato growing as the soil is nearly all a loam or sandy loam. The general practice is to grow potatoes in a six or seven years' rotation. The pasture land is broken early in the autumn, generally the last of August or the first of September. It is rolled and harrowed at once to hasten decomposition and to germinate the weed seeds thoroughly. It is then harrowed every two or three weeks till the end of November, after which it is cross-ploughed or ribbed up. In the spring it is again harrowed, and the sets for early potatoes planted as soon as the land is fit, varying according to locality and season from the first to the second of

May. The land is prepared for the general crop by further harrowing to preserve the moisture, and to destroy any remaining weeds. The planting is done from the 15th of May to the middle of June. The bulk of the crop in an average season is, however, planted by the first of June.

A large number of farmers grow a crop of oats after the pasture before the potatoes. By doing this they hope to economize labour in the preparation of the soil, and to have a better opportunity of destroying weeds.

FERTILIZATION

Barnyard manure is the principal fertilizer used. Probably artificial fertilizers are used in the growing of 25 per cent of the potatoes, but only with barnyard manure, which is very frequently made up of seaweed and kelp, swamp muck and stable manure. Where the former is very abundant, potatoes are frequently grown on it and an artificial fertilizer. It seems to improve the quality, producing a white, clean-skinned, dry potato. Pure chemicals are the only artificial fertilizers used in this province, and, as has already been

said, are used with farmyard manure, at the rate of about 100 lb. of nitrate of soda, 300 lb. of superphosphate, and 150 lb. of muriate of potash per acre. Where stable manure only is used it is generally spread on the pasture field during the previous autumn and in the spring; where it is mixed with seaweed and kelp and swamp muck it is generally applied in the autumn; if the land has been in oats, before the ploughing has been done, if in sod, after, or in the spring just when the planting is being done.

The seed is generally cut a few days before planting and sprinkled with lime, and sometimes treated with corrosive sublimate.

Considerable care is taken in the selection of the tubers that are to be used for seed. The sets are cut as large as possible with either one or two eyes. The planting is generally done with the plough, the sets being dropped, every third round, from 12 to 18 inches apart in the row. There are a few potato planters in the province, but probably not more than a dozen.

The harrow is used at frequent intervals till the potatoes are about four inches high, to destroy weeds and to conserve the moisture. The

scuffler is run through them, generally three times before they blossom, after which they are hilled.

The potato bug (Colorado beetle) and the blight are the chief troubles of the potato grower, for the former Paris green is applied three times during the growing season, and about half the farmers make the last two applications in conjunction with the Bordeaux mixture for the prevention of blight.

The harvesting of the early crop begins about the middle of September, and of the main crop about October 10th. The picking is generally done by a gang of from four to eight, who go from farm to farm during the digging season. The potatoes are dumped into a two-wheeled cart, and hauled direct to market or to the place of storage, which is almost always the cellar of the farm house. They are tipped into it through a hatchway and shovelled back into large bins, where they remain till they are used by the farmer himself or hauled away to market. Large quantities of them are used by the farmer for the feeding of pigs, sheep, and, if the price is low, to cattle. No steps have yet been taken by the Department of Agriculture of the Island to facilitate the marketing of potatoes.

NOVA SCOTIA

BY F. L. FULLER, SUPT. OF AGRICULTURAL SOCIETIES

A great variety of soils, widely separated markets, calling for an entirely different type of tuber, have made potato growing in the province of Nova Scotia a somewhat local matter, so that one cannot make statements in regard to varieties, etc., equally applicable to the whole province.

Following the American Civil War, when potatoes were in great demand in the United States and admitted "duty free," the farmers of the

Annapolis Valley (where soil conditions were particularly favourable, and where, on account of the nearness of Boston, a great American potato buying port, and the abundance of home-built wooden vessels affording easy and cheap transportation), made a specialty of potato culture. This was prior to the appearance of the Colorado potato beetle; rot and blight were scarcely known; prices remained uniformly high for a number of years, and as a

result, this portion of the province reaped a great harvest. Fortunes were accumulated, magnificent homes were built, and a habit of extravagant living was formed, which proved a decided handicap in later years. It was during this period that a variety of potatoes called "Prince Alberts" became very popular. This was a strong growing, rough, skinned, dark blue variety, and became known in Boston as Nova Scotia "Blues," "Shenangoes," and finally as "Blue Noses," a name

followed by an increase in duty to 25 cents per bushel. About this time (or to be exact, in 1877), the Colorado beetle made its appearance, and later blight and rot frequently destroyed the entire crop. Thus for a time a famous potato-growing section almost entirely dropped out of the business, developing the apple business instead. As the price of potatoes went up in the United States, the Government found it in their own interests to reduce the duty. Consequent to this change,



PRIZE-WINNING POTATO FIELD ON FARM OF ALBERT C. VERNOTTE AND SON, WEST NORTHFIELD, LUNENBURG COUNTY, NOVA SCOTIA.

which was later applied to all Nova Scotians, not merely as a nickname, but rather as a mark of quality of both the man and his products. The name with its aristocratic suggestion is still in use, and we are inclined to be proud of it, although many are unaware of its really plebeian origin.

Some years later the American government, by imposing a duty of 15 cents per bushel on potatoes, gave the industry a set-back. This was

and at the same time, the development of the West Indies' market, together with a knowledge of the means of combatting pests, the industry has again grown to quite formidable dimensions, taking second place only, and fitting in nicely with fruit growing. During the last few years the United Fruit Company, which is a very strong organization in the Annapolis Valley, have found a very remunerative market in Cuba and elsewhere for large quantities of

potatoes. Meanwhile, other portions of the province, particularly Colchester, Hants and Kings counties, have had a very good, if somewhat limited, market in Bermuda. The demand here was for seed potatoes of the red-skinned varieties, and was confined almost entirely to the "Garnet Chili" variety.

Two years ago powdery scab was reported in Canada, and, as a result, an embargo was placed on our potatoes going to United States and Bermuda. The federal and provincial Departments of Agriculture took this matter up and by means of a careful inspection ascertained that powdery scab is largely confined to counties which do a coastal trade, the disease having been distributed by potatoes brought in in this manner being used for seed. Fortunately the four largest exporting counties, Colchester, Hants, Kings and Annapolis, were found to be practically free from the disease. As a result, Bermuda, which Island had declared an embargo on all Canadian potatoes, admitted potatoes from these counties, provided a certificate of inspection, certifying freedom from the disease, was attached by the plant pathologist of the provincial Department of Agriculture.

While few sections of the province grow largely for export, most counties more than supply the local demand, and many of them, by adopting improved methods, have brought the cultivation of this crop to a high state of perfection.

The Department of Agriculture, to encourage better methods, has for some years given prizes for the best acre of potatoes. For this purpose the province is divided into four districts, Annapolis, Kings, Hants and Lunenburg counties comprising one of these districts. Lunenburg county growers won the first four prizes in this competition. The first prize field, containing exactly two acres, yielded 970 bushels of market-

able potatoes, and 30 bushels of refuse, or small potatoes. Almost as high yields were recorded in the competition held in the eastern counties of the mainland.

The quality of Nova Scotia potatoes is first-class. Some years ago the Ontario Agricultural College made a cooking and starch content test of potatoes gathered from all parts of Canada, and a sample sent by the Nova Scotia Provincial Farm made the highest test, while Nova Scotia potatoes, as a whole, stood higher than those from any other province.

Regarding varieties, while there are many named varieties, they do not represent many different characteristics. During recent years the demand has been strongly for a smooth, medium sized, white potato, and in both the early and the general crop the "Carman" type largely predominates.

The place in the rotation, the preparation of the soil and the method of cultivation, differ in different localities. In sections where they are grown in large quantities the work is done entirely by machinery. In such instances, a stubble field is usually chosen. The crop is planted with a planter, cultivation done almost entirely with different styles of cultivators, and harvested with potato "diggers." In smaller fields, where hand cultivation is practised, a sod field is usually chosen. Where hand cultivation is practised, there is usually more care in the selection of seed, more fertilizer used, and much larger yields secured.

Commercial fertilizer is largely used for the growth of this crop. Where sod fields are used, it is sometimes customary to spread a dressing of stable manure on the sod and plough it under, and commercial fertilizer worked in with the harrow.

Seed is usually treated with formalin. Scarcely any of the larger growers attempt to grow this crop

now without spraying. Bordeaux mixture is the most common spray in use. Where there are Potato Beetles, paris green is added to the mixture. The amount of spraying varies; all fields in the provincial competitions were sprayed from two

to four times during the growing season.

Where possible, the crop is largely marketed from the field. Fruit warehouses and root cellars are used when necessary to store the crop.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

THE potato industry in New Brunswick has assumed large proportions in the last ten years, until the crop in 1914 amounted to approximately ten millions of bushels. Very much has been learned during these years as to the place in the rotation, preparation and cultivation of the soil, fertilizers and potato diseases.

Previous to ten years ago, commercial fertilizers were practically unknown in the province, but in recent years they have come into very general use, until at present seventy-five per cent of the potatoes raised are grown with commercial fertilizers with an increase in the crop of twenty-five to thirty-five per cent reported. The potatoes so raised are not so susceptible to scab as when raised upon ordinary barn-yard manures or fish manures, such as are used in some sections of the province. It has been found that commercial fertilizers cannot be continuously used successfully without a proper rotation and by some means adding vegetable matter to the soil. Farmers who have attempted this have found that their land would soon require two thousand pounds instead of fifteen hundred pounds to the acre.

The following rotation is being adopted throughout the province: First year, potatoes with commercial fertilizer; second year, seed down with a grain crop, with a much larger proportion of clover than was formerly used; third year, hay;

very many are now taking off but one crop of hay and then breaking up and ploughing under the second growth of clover; the next year a crop of corn or turnips is raised, the field having been well fertilized with barn-yard manures. This we consider a very satisfactory rotation. The same system is followed by all our farmers, except that some take off two or even three crops of hay before breaking up. From three to five years, however, is the average length of rotation among our best farmers.

While there are a number of varieties of potatoes being raised in New Brunswick, the two favourites are Irish Cobbler for the early crop and Green Mountain for the general crop.

We have the usual potato diseases common to all countries, but we are learning that the vast majority of these may be successfully combatted by the proper treatment of seed, by careful selection of all seed stock and the faithful use of the Bordeaux mixture. I would like to emphasize the word "faithful" as, in my observations, very many of our farmers are not faithful in the use of this excellent article. When the farmer persistently uses this mixture from the time the plant is a few inches above the ground until well toward the harvest, our experience has been that we have very little blight and the tubers are invariably much better keepers in storage.

The New Brunswick product is in very much better condition than it was several years ago. There is a general agreement that there has been a steady improvement and that we are turning out a very much better quality of potatoes than in the past. From a recent visit to the potato growing areas, I am satisfied that the majority of our farmers are giving close attention to the things that are necessary for the production of the very best crop. Large quantities are shipped to the market

directly from the field at the time of harvesting, probably twenty-five per cent, the balance being stored either in cellars or in specially built frost-proof potato houses, used exclusively for the storing of potatoes. These buildings are light and well ventilated and are so arranged that teams can drive into them and the potatoes can be sorted and loaded in the building. They are fitted with heating apparatus that will heat the building during excessive cold. These buildings are giving splendid satisfaction.

QUEBEC

BY REV. H. BOIS, PROFESSOR OF AGRONOMY AT THE SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCAITIÈRE

THE area annually planted in potatoes in the province of Quebec is about 125,000 acres, yielding twenty million bushels valued at \$9,500,000.

The following varieties are particularly recommended:

Early:— Rochester-Rose, Rose-Blanche, Rose-hâtive.

Standard varieties for general use:— Carman No. 1, Late Puritan, Money Maker, Snowflake, Green Mountain, Jerusalem.

On sandy soils and loams, it is recommended to plant potatoes after a pasture. On clay lands, which are difficult to work, the pasture should be followed by a cereal, then by potatoes.

In the first case the pasture is ploughed in August, the land is harrowed then rolled; in the spring, at the end of April, the manure is ploughed under or harrowed in. In the second case, ten pounds of red clover seed are sown with the cereal; if manure is available in the fall it is spread on the top of the land; otherwise the land is manured in the spring. At the beginning of June the land is ploughed six inches deep and worked as thoroughly as possible with a disc harrow. Some growers

find it preferable to plant at two different dates in order to lessen the chances of failure; a part of the potatoes is planted in May, the other part about the 15th of June. The tubers are planted with the planting machine or the plough; the rows are from 25 to 30 inches apart, according to the variety, and the sets are planted from three to four inches deep.

A few days after the potatoes are planted, the harrow is run lengthwise and crosswise to loosen the land and destroy weeds which may have come up. As soon as the tops have grown a little, cultivation is started with the horse-hoe and repeated three or four times during the season. On a wet soil, the crop is hilled up, but on sandy soil and very dry soil, level cultivation is given, as hilling up causes the soil to dry up excessively.

The best fertilizer for potatoes is without doubt farm-yard manure, used at the rate of twelve to fifteen tons per acre. But the farmer who grows a large quantity of potatoes is often obliged to use commercial fertilizers. Before purchasing such fertilizers, however, he had better make sure that he does not waste any of the plant-food produced on

the farm. Too often, a good half of the liquid manure is lost in the stable or outside; this is why the use of cut straw, dried peat, and even saw-dust, as bedding, is strongly urged, in order to absorb the liquid manure which is rich in nitrogen and even in potash, the two most expensive and most important elements in potato growing.

The use of fertilizers alone is not recommended. It is better to use a smaller quantity of farm-yard manure and supplement it with from 75 to 100 pounds of sulphate of potash. The use of nitrate of soda and superphosphate sometimes gives good results on poor lands. The use of complete fertilizers is never advised. Clover ploughed under also gives excellent results.

It is recommended to take the potatoes out of the cellar a few days before planting and put them in a lighted place, not too warm but dry, as this hastens germination. It is better to use potatoes of average size which are cut in three sets or more, each having from two to three good germs. The sets are dusted with plaster and planted as soon as possible.

There is only one insect which attacks the potato crop, viz.: the potato bug or Colorado beetle; it is

controlled by Paris green or lead arsenate, or both combined, applied at the right time. It has been observed that the damage caused by this insect is greatly reduced when a regular rotation is practised, that is to say when potatoes are grown only every five of six years on the same soil.

Common scab occurs on lands which are difficult to drain; the use of lime or ashes seems to provoke the growth of this scab.

The most dangerous disease is, without doubt, the powdery scab, which occurs chiefly in farms where potatoes are grown year after year on the same soil; it is not as yet very common. The remedies are the following: Thoroughly disinfect the cellars where the powdery scab has been observed, purchase good tubers for planting, and do not grow potatoes for at least ten years on soils that are known to be infected with the germs of these diseases.

Potatoes keep well in cellars which are well ventilated, dry and dark. When potatoes are piled in heaps several feet deep, slatted ventilators are put through the heaps for the circulation of air. Very good results are also obtained in pits dug in dry soil and lined inside with cedar pieces.

MACDONALD COLLEGE

BY T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE

A considerable quantity of potatoes has been grown at Macdonald College to supply the college demand, amounting to about 2000 bushels per year. These are grown by the Horticultural department on soil varying from sandy loam to clay loam, much of which is not specially adapted to the potato crop. The varieties grown are:—Irish Cobbler, early, and Green Mountain and Gold Coin for main crop. Many other varieties

have been tried out but have not proved better, if equal, to the above varieties under our conditions. The Green Mountain and Gold Coin are high class table potatoes when well grown, and they yield well under average good conditions. No definite rotation has been followed here, but during recent years the crop is not grown on the same soil more frequently than once in three years. This is largely on account of the scab, and it has been found that, even with

treating the seed potatoes for scab before planting, it is not safe to plant every other year on the same ground.

One of the best rotations that could be followed would be grain, clover and potatoes. By seeding with clover at the time of planting grain a good crop of clover hay should be obtained the second year, and this clover sod should be fall ploughed for potatoes in the third and last year of the rotation. A grass sod, if fall ploughed, should also give good results.

A finer and cleaner crop of potatoes is obtained on the lighter soils and this type of soil is preferred to the moderately heavy clay soils or even clay loam soils. The potato is occasionally used as a cleaning crop to rid the soil of bad weeds and is recommended for this purpose.

Where the field is fall ploughed, particularly a sod field, some preparation is needed in the spring before planting, but when planting from three to five inches deep the preparation of the field is sometimes not completed until after the crop is planted. With very shallow planting one cannot do much harrowing or cultivation until the rows of potatoes are visible, but with deep planting it is possible to cultivate the whole field just as the first plants are coming through, but care must be taken not to disturb the young plants too much or drag them in the soil. Cultivation at this time saves much later work. Three or four cultivations are given to the growing plants, the last one coming just at the blossoming period or a little before and at that time the plants are ridged up two to three inches, just enough to insure that all tubers formed will be covered with soil. We do not get the same results from high ridging of the row, as the plants suffer greatly in a dry season. One hand-hoeing usually suffices but

this is dependent on the number of weeds that grow.

We have not been manuring directly for the potato crop, but usually apply manure to the crop preceding the potato and at the time of planting the potato about 600 lb. of fertilizer per acre is used. The composition of this fertilizer varies, depending on the soil, but as most of our soil is not deficient in potash we use a fertilizer fairly high in phosphoric acid, medium in nitrogen and comparatively low in potash.

At times we have been troubled with scab, but where clean seed or moderately clean seed, treated for scab, is used and the potatoes grown on same land but once in three years, we have none. New Brunswick seed gives us good results but is no better than our own seed when it is clean and well grown. We have been seeding at the rate of 15 to 16 bushels per acre.

During the last two seasons we have had practically no late blight, however, we use the Bordeaux mixture (4-4-40) for three sprayings and can usually control the potato beetle with one spraying of arsenate of lead.

The crop is stored in bins in a large root cellar. This cellar is frost proof and comparatively dry, and clean potatoes keep exceptionally well in it.

Very little experimental work is being carried on here in the growing of the potato except in the comparison of the leading varieties and in spraying with the different fungicides and insecticides. No fungicide has been found to replace the Bordeaux mixture, but the dry arsenate of lead is very promising as an insecticide and is a more convenient form than the paste arsenate of lead. The dry arsenate of lead is an acid lead, yet has given no burning on the potato foliage.

ONTARIO

BY PROFESSOR C. A. ZAVITZ, B.S.A., ONTARIO AGRICULTURAL COLLEGE

THE potato (*Solanum tuberosum*), is one of the most important food plants for man. It is easy of propagation, is an abundant yielder, possesses good keeping qualities, and is relished by people generally. The potato is a native of America, and can still be found in the wild state in Chili, and possibly in other countries of South America. In order to distinguish it from the sweet potato it is sometimes called the Irish potato, the English potato, the round potato, or the white potato.

From the report of the Ontario Bureau of Industries for 1913 we learn that for the past thirty-two years the average annual record for the potato crop of Ontario has been 157,765 acres, which yielded 18,292,976 bushels, having a market value of \$8,164,660. The average yield of potatoes for Ontario for the thirty-two years from 1882 to 1913 inclusive, has been 116 bushels per acre, and that for the United States for the thirty-four years, from 1880 to 1913 inclusive, has been 83 bushels per acre, or an increase of the former over the latter of practically 71 per cent. The highest average annual yields per acre in the province of Ontario since 1882 were 163 bushels in 1884, and 159 bushels in 1895 and in 1914; and in the United States since 1880 were 113.4 bushels in 1912, 110.4 bushels in 1903, 106.8 bushels in 1909, 102.2 bushels in 1906, and 101 bushels in 1905. In all of the other years the average yield in the United States was less than 100 bushels per acre per annum. The lowest annual average yield per acre in Ontario was 76.1 bushels in 1887, and in the United States 56 bushels in 1890.

According to the Census and Statistics Monthly for Canada the annual average market value of the potatoes

produced in the Dominion amounted to \$35,985,000, and in Ontario to \$11,486,000. According to the same source of information Ontario has produced 32 per cent, Quebec, 23 per cent, and New Brunswick, 10 per cent of the market value of the average annual potato crop of the Dominion for the past five years.

Not only has the average yield of potatoes in Ontario varied greatly in different seasons but it has also varied in the different localities throughout the province. Usually the highest average yields have been produced in the northern and eastern, and the lowest average yields in the south-western portions of Ontario. As the average yield of potatoes per acre in Wellington county, in which the Agricultural College is located, has been very similar to the average yield throughout the province for the past thirty-three years the results of experiments conducted at Guelph should form a good general guide for Ontario.

VARIETIES OF POTATOES

We have had under experiment at the Ontario Agricultural College upwards of three hundred varieties of potatoes. It is the policy to test all varieties for at least five years, after which the most desirable kinds are continued in the experiments, and the others are dropped from the list.

Early Varieties:—As there is usually much interest taken in early potatoes it was thought advisable to make a special test of some of the early kinds. Only a few of the varieties which had been grown in the general experiment were selected for the test. The experiment was conducted for six years in succession by planting four rows of each variety in the spring, and digging two rows of each at the end of nine weeks, and two rows of each at the end of twelve

weeks after the seed was planted, in order to ascertain which variety of potatoes would give the best results in the shortest possible time after planting. The experiment was conducted in duplicate. The following table gives the average results of the twelve tests conducted during the six year period, in bushels of potatoes per acre per annum:—

RESULTS OF SIX YEARS' EXPERIMENTS
WITH EARLY POTATOES.

Varieties of Early Potatoes	Nine Weeks	Twelve Weeks
Early Andes	159 6	251 5
Six Weeks	156 5	245 2
Early Fortune	153 8	230 8
Early Dominion	152 9	255 7
Early Dawn	151 7	239 6
Early Pinkeye	145 9	240 3
Early Ohio	142 9	227 6
Stray Beauty	111 7	197 9
Burpee's Extra Early	104 7	225 4

but the results were reversed three weeks later.

Since this experiment was concluded other varieties have been added to the general potato experiment. The following gives the average yield of potatoes per acre per annum of each of four varieties for four years: Extra Early Eureka, 208.4 bushels; Irish Cobbler, 191.5 bushels; Early Fortune, 187.8 bushels, and Early Ohio, 163.4 bushels. The Extra Early Eureka and the Irish Cobbler resemble each other in appearance, but the former has surpassed the latter in productiveness. The Irish Cobbler variety of potatoes has been increased largely throughout Ontario in recent years. The two varieties of early potatoes which are probably grown the most extensively throughout the province at present are the Irish Cobbler and the Early Ohio.



EXPERIMENTAL PLOTS WITH POTATOES BEING PLANTED WITH GREAT CARE ON
THE COLLEGE FARM AT GUELPH.

These results show that there was a marked difference in the yields of each variety from the two dates of digging. This, however, was more marked in some cases than in others; as for instance, the Stray Beauty gave a larger yield of potatoes per acre than the Burpee's Extra Early at the end of the nine week period,

Late Varieties:—Each of four varieties of late potatoes have been under experiment at the Ontario Agricultural College for the past twenty-five years without change of seed from an outside source. It is interesting to note that during the past ten years fully one-half the yields have been higher than those

for the average of the whole period of twenty-five years. In the case of two of the varieties the highest yields were produced in the twenty-third year in which the potatoes had been grown on the College farm. The following gives the average yield per annum, in bushels per acre, of each of the four varieties for the twenty-five year period:—

	Bushels.
Empire State	219 9
Rose's New Invincible	216 2
Rural New Yorker, No. 2	208 4
White Elephant	198 7

The Empire State has proven to be not only a high yielder, but the potatoes are of excellent quality.

the unfavourable weather conditions for the production of a late potato of the highest quality.

In 1914 an enquiry was made throughout Ontario regarding the most extensively grown varieties of potatoes in the various counties of the Province. In all fifty-one varieties were mentioned one or more times as being the most extensively grown in the different counties. As a result of a similar enquiry fifty-seven varieties were mentioned in 1913, and fifty-eight varieties in 1912. It is to be hoped that the number of varieties is gradually decreasing in the Province, and that within a



IN THE FOREGROUND WILL BE SEEN A FEW OF THE MANY EXPERIMENTS WITH POTATOES IN THE TRIAL GROUNDS AT THE ONTARIO AGRICULTURAL COLLEGE.

During the past eight years the highest yielding variety of potatoes has been the Davies' Warrior. This variety was imported from southern Scotland about ten years ago. The average yield per acre per annum of the Davies' Warrior for the past eight years has been 252.2 bushels, and of the Empire State for the same period, 192.4 bushels. The Davies' Warrior is a white potato of good quality. As it is a late potato, however, it has not done quite as well in each of the past two years as it did formerly. This is probably owing to

comparatively short time the farmers will confine themselves largely to a few of the highest yielding varieties of the best quality. The following gives the names, and the order of the varieties which were mentioned the greatest number of times in 1914: Rural New Yorker No. 2, 32; Delaware, 25; Carman, 19; Empire State and Irish Cobbler, each 16; Early Rose, 14; White Elephant, 13; Extra Early Eureka, 9; American Wonder, 8; and Green Mountain, 7. If we take into consideration the answers to enquiries in each of the past

eight years we find that the Rural New Yorker No. 2 has been grown more extensively than any other variety, and this has been followed by the Empire State as the second most extensively grown variety.

SOIL CONDITIONS

Potatoes are grown on a great variety of soils throughout Ontario, but they do particularly well and are grown extensively for commercial purposes in sections where there is a fertile sandy loam.

Place in the Rotation.—The position of the potato crop in the rotation is not uniform throughout Ontario. It is probably safe to say, however, that the potatoes are grown after clover and grass more frequently than after any other crop. They require a considerable amount of vegetable matter in the soil, and the clover sod leaves the land in a friable open condition which is particularly suitable for potato growing.

Preparation. Sod land is generally ploughed deeply in the autumn and allowed to remain uncultivated for the winter. In the spring it is usually left undisturbed, or probably harrowed once or twice previous to the preparation of the seed bed for the potato crop. Planting takes place on the average about the twentieth of May although in some sections the planting does not take place until two or three weeks later. The early varieties are frequently planted near the beginning of the month of May, especially if they are grown to supply the first market. Some farmers instead of ploughing the land in the autumn do not plough the sod until time for planting the potatoes when they drop the tubers in every third furrow. Although this method is not as reliable, satisfactory results are frequently obtained if the weather conditions are favourable.

Cultivation.—It is usually a good plan to harrow the land soon after the potatoes are planted and before the tops have appeared above the

ground. The land can usually be harrowed once or twice after the potato tops have made their appearance. For best results the crop should be cultivated every week or ten days if the weather is comparatively dry. It is a good plan to cultivate the potatoes as soon as the land is in proper condition after each heavy rain. This tends to conserve moisture, liberate plant food, keep the potatoes free from weeds, and stimulate rapid growth. Experiments were conducted at Guelph in each of ten years in which level and hilled cultivation were compared. In the dry years the level cultivation gave the highest returns, and in those seasons in which there was a considerable amount of rain fall the hilled land produced the heaviest crops. In the average of the ten years' experiments there was practically no difference in yield per acre from the two systems of cultivation. It is probably an advantage, however, to slightly elevate the soil along the rows of the potatoes, especially during the last cultivations.

FERTILIZATION

As a result of experiments conducted at the Ontario Agricultural College in each of five years it was found that the Royal Canadian and the Potato fertilizer gave the highest yields of potatoes per acre of the different commercial fertilizers used in the five years' experiment. In another experiment, extending over a period of five years, in which several fertilizers were used, the highest yield per acre was obtained from a mixed fertilizer similar to the one used in our co-operative experiments, and which was composed of nitrate of soda, muriate of potash and superphosphate in the proportion by weight of 1, 1 and 2, and which was applied at the rate of 213 pounds per acre. This was followed by the Royal Canadian and the Potato fertilizer, each of which was applied at the rate of 320 pounds per acre. Based on

these and other results, a co-operative experiment was conducted in each of five years previous to 1912, in which six different fertilizers were compared with each other, with farmyard manure, and with no fertilizer with potatoes. The average results of this experiment conducted within the five year period on 98 farms of Ontario were reported in 1911. The average results of the 98 experiments showed the yield of potatoes per acre to be as follows: Unfertilized land, 129.2 bushels; 160 pounds of nitrate of soda, 133.4 bushels; 160 pounds of muriate of potash, 160.8 bushels; 320 pounds of superphosphate, 156.8 bushels; 213 pounds of the complete fertilizer previously described, 166.8 bushels; 320 pounds of potato fertilizer, 167.5 bushels; 320 pounds of Royal Canadian fertilizer, 164.5 bushels; and twenty tons of cow manure, 174.7 bushels. According to the prices given for the manure and the fertilizers in 1911, the increased yield of potatoes was produced at a cost per bushel for the complete fertilizer of 11.3 cents; muriate of potash, 12.7 cents; cow manure, 13.2 cents; superphosphate, 14.2 cents; potato fertilizer, 14.4 cents; Royal Canadian fertilizer, 15.9 cents, and nitrate of soda, 19.8 cents.

Based on the results of past experiments it was thought wise to start a co-operative experiment in testing different quantities of fertilizers per acre in comparison with each other, with farmyard manure alone, with farmyard manure and fertilizer, and with unfertilized land. We, therefore, placed on our list an experiment with fertilizers, cow manure, and no fertilizer with potatoes, in the spring of 1912, and we conducted experiments in 120 places throughout the province in each of the past three years. In each of these years we divided the number into four groups of thirty each, and used the Royal Canadian fertilizer for one group, the

potato fertilizer for another, a fertilizer composed of nitrate of soda, muriate of potash, and superphosphate, in the proportion by weight of 7, 9, and 16, for another, and a fertilizer composed of nitrate of soda, muriate of potash and superphosphate, in the proportion of 1, 1 and 2 for the fourth group. Each of the first three fertilizers were applied alone at the rate of 320, 640, and 960 pounds per acre, and 320 pounds in combination with ten tons of cow manure per acre. In comparison with these, another plot received cow manure at the rate of twenty tons per acre, and one plot was left unfertilized. For No. 4 group the fertilizer was used in the same proportion, with the exception that the minimum amount was 213 instead of 320 pounds per acre. Owing to the unusual weather conditions in 1912 the potato rot was very prevalent and many of the results of the fertilizer experiments obtained could not be used on that account. There were, however, nineteen good reports of successfully conducted experiments with fertilizers and potatoes obtained in which the rot did not prove troublesome and which represented fairly well the four different kinds of fertilizers distributed. In 1913 we received in all thirty-one good reports, there being from six to ten good reports for each group. In 1914 twenty-eight good reports of successfully conducted experiments were received, there being exactly seven good reports for each separate test. We therefore have for the three years seventy-eight good reports of successfully conducted experiments. The following table gives the average results of the fifty-eight reports of the successfully conducted experiments of the first three groups in the past three years, and also the average results of twenty tests made in the last three years with fertilizers of group 4:—

RESULTS OF CO-OPERATIVE FERTILIZER EXPERIMENTS.

Fertilizers and Manure.	Quantity per Acre. Pounds.	Yield of Potatoes per Acre. (bus.)	
		Groups 1, 2 and 3. Average 3 years. 3 sets. 58 tests.	Group 4. Average 3 years. 20 tests.
1. No Fertilizer		128 3	142 3
2. Fertilizer	320	150 1	165 9
3. Fertilizer	640	161 2	180 4
4. Fertilizer	960	175 0	190 4
5. Fertilizer	320 }		
6. Cow Manure	20,000 }	175 1	194 1
	(10 tons)		
Cow Manure	40,000 }	177 6	194 3
	(20 tons)		

The fertilizers used for groups 1, 2 and 3 were somewhat similar in composition, all containing nitrogen, potash and phosphoric acid. The results as here presented are those from general fertilizers used in different quantities on what might be termed the average soil of Ontario, as the experiments were conducted on 58 different farms. It will be seen that on the average there was an increase in the yield of potatoes per acre of 21.8 bushels from 320 pounds of fertilizer; 32.9 bushels from 640 pounds of fertilizer; and 46.7 bushels from 960 pounds of fertilizer. The yield per acre increased as the amount of fertilizer used became greater. From a study of these results it would seem as though the first 320 pounds of fertilizer increased the yield 21.8 bushels; the second 320 pounds, 11.1 bushels; and the third 320 pounds, 13.8 bushels. It will also be observed that the 20 tons of cow manure per acre increased the yield of potatoes 49.3 bushels or 2.5 bushels per acre more than the combination of 10 tons of cow manure and 320 pounds of fertilizer per acre. The average results of the twenty tests in group 4 are fairly similar to those of the other three groups already discussed. The amount of fertilizer for plot 2 in group 4 consisted of 213 instead of 320 pounds per acre and is identical with the

complete fertilizer used for five years throughout Ontario in experiments conducted on 98 farms previously referred to. From a study of the results in the foregoing table the increases in the yields of potatoes which were made at the lowest cost in the average results for the three years were obtained from 320 pounds of complete fertilizer as represented by groups 1, 2 and 3, and from 213 pounds of the fertilizer composed of nitrate of soda, muriate of potash, and superphosphate, in the proportion by weight of 1, 1 and 2. In the last result referred to there was an increase of 23.6 bushels per acre produced at a cost of approximately \$4.24 for the fertilizer which would be about 18 cents for each bushel of increase in the potato crop.

Fertilizers are not used very extensively throughout Ontario. Their use is apparently increasing, however, on such crops as potatoes, mangels, sugar beets, and fruit. The fertilizers can be used more economically with potatoes than with the grain crops.

DISEASES

There are a few diseases which affect the potato crop of Ontario. Much caution, however, has been exercised in keeping such diseases as the potato canker and the

Powdery Scab from being introduced into the province. A few of the other diseases are effectually treated by our most progressive potato growers.

Treatment for Potato Scab.—Experiments have been conducted at the college in using different treatments for the potato scab. One of the best methods adopted has been the formalin treatment. This consists in treating the scabby potatoes by soaking them for two hours in a solution of formalin made by mixing one pint of the forty per cent formaldehyde with thirty gallons of water. This amount is sufficient for treating fifteen or twenty bushels of potatoes.

Treatment for Blight.—Various methods have been used for the treatment for blight. One of the most effectual of these has been the use of the Bordeaux mixture with a machine which is so constructed as to spray both the upper and the lower parts of the leaves. Three treatments conducted in this way have been more effectual than five or six treatments where the vines were sprayed simply on the upper surface.

CONCLUSION

One of the weaknesses in connec-

tion with potato growing in Ontario has been the lack of co-operation in the production of the best varieties, and the proper delivery of the potatoes in the best markets. This weakness, however, is being remedied by the formation of Co-operative Societies such as the one in the Rainy River District, the one at Caledon in Halton County, etc. Separate varieties particularly suited to the locality are used, as for instance, the Extra Early Eureka variety in the Rainy River District, and the Dooley variety in Caradoc, Middlesex County. With the proper establishment of Co-operative Societies in the potato growing districts of Ontario there is no reason why we cannot produce in this province an increasing quantity of potatoes of superior quality. If all the farmers of Ontario would confine their attention to two or three of the best early, and two or three of the best late varieties of potatoes, there would be a higher production, the potato crop would be of better quality, and the prices realized would be higher than those secured at the present time. There will probably be marked improvements in potato production in Ontario in the near future.

MANITOBA

BY S. A. BEDFORD, DEPUTY MINISTER OF AGRICULTURE

THE Manitoba Department of Agriculture has found that for early crop the best varieties of potatoes are the Early Bovee and the Early Ohio; for general crop the Carman, Late Puritan, Manitoba Wonder and Wee MacGregor varieties.

Potatoes in Manitoba are generally raised in a separate plot devoted to vegetables and are not reckoned in crop rotation. The soil is prepared for potatoes by deep plowing in the spring or fall; before planting the land is harrowed, then rolled; the

potatoes are planted in every third furrow, making the rows three feet apart; the seed is deposited, nine inches apart in the row, at a depth of from three to three-and-one-half inches. The best results have been obtained from selecting fair-sized tubers typical of the variety and by cutting to three-eye sets. The cultivation requirements are to harrow directly after planting and thereafter every few days until the tops are four inches or five inches high; the plot is then cultivated with a one or two horse machine between the rows

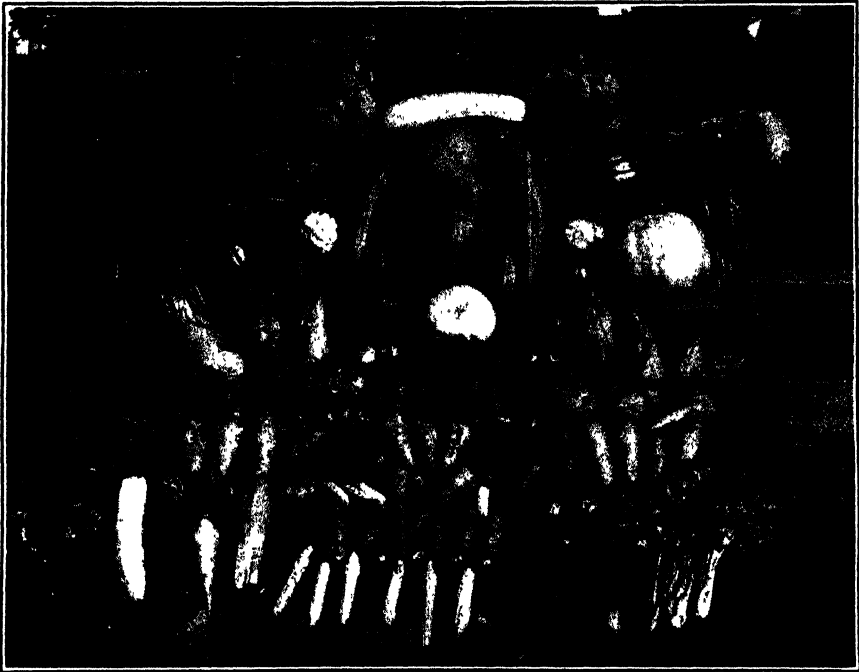
until blossom appears, when the rows are slightly hilled to prevent exposure of the tubers.

From 10 to 15 tons of well rotted barnyard manure is used per acre for fertilization purposes. No commercial fertilizers are used.

The seed being healthy generally in Manitoba, it is not necessary to treat it; but sometimes a treatment with formalin would improve scabby seed. Neither is the growing crop treated for diseases as a rule; but it

In connection with the marketing of potato crops very little has been done in Manitoba; but the Department is encouraging the production of larger crops of improved varieties by the publication of bulletins on gardening and by holding meetings in districts where potatoes and other truck crops are largely grown.

We find that the quality of potatoes depends very largely upon the character of the soil. It is exceedingly difficult to get a potato of high



VEGETABLES GROWN AT DAUPHIN, MAN.
This Exhibit won over 62 First Prizes and 21 Second Prizes.

is generally found necessary to use Paris green for Colorado beetle.

The crop is stored in the basements of large buildings in the cities and keeps very well there when properly ventilated. Farmers usually store in the house cellars, which are sometimes much too warm for the best results. We find that it is very important to have the seed tubers carefully stored in a cool temperature during the winter months as badly sprouted potatoes lack vigour.

quality from the rich, black clay loam such as we have in the Red River Valley; the tuber absorbs too much moisture for the best results. Sandy loams, however,—and these are the general rule outside of the Red River Valley—give a potato of high quality and, if properly treated, excellent yields.

The growing of potatoes is an important feature of the Manitoba Boys' and Girls' Clubs and splendid results are being obtained.

SASKATCHEWAN

BY J. BRACKEN, B.S.A., PROFESSOR OF FIELD HUSBANDRY, UNIVERSITY OF SASKATCHEWAN

THE earliest varieties of potatoes we have grown here are Early Andes, Early Triumph, and Early Ohio. Early Ohio is a little later than either of the other two, but is a much heavier yielder. We look upon this as a leading early sort for this district.

Everett and Irish Cobbler are leading medium early sorts. The former is a little heavier in yield than the latter but is pink in colour, while Irish Cobbler is white.

Several of the late sorts have done exceedingly well with us. Table Talk, Carman No. 3, Gold Coin, and Wee McGregor are among those we look upon with greatest favour.

In Saskatchewan the potato crop should generally be planted on fallowed land, for two reasons: (1) because the yield is greater than on soil prepared in any other way; and, (2) the crop following potatoes planted on fallowed land can be counted on to produce satisfactorily. For potatoes, the fallow should be ploughed deeply as early as possible in the month of June, and the surface of the field cultivated sufficiently thereafter to keep down weed growth and to maintain a mulch. On land prepared in this way the seed may be ploughed in to a depth of four or five inches, with every prospect of good returns. If the seed is dropped and covered, the land should be packed and harrowed; another harrowing at the time the plants are showing themselves above ground is generally advisable, and additional harrowing should be given when necessary to control the growth of small annual weeds, and to maintain a surface mulch. Thorough inter-tillage thereafter is essential.

In 1914 potatoes cultivated four times produced nineteen bushels more total yield per acre than the

same variety on the same land cultivated twice.

"Hilling" is not so necessary under average soil conditions in this province as in more humid regions. Our results to date seem to indicate that throwing the earth up around the plants to a medium height is to be preferred over a higher hilling.

As yet we have no data on the value of fertilizers of any kind on the potato crop, either under garden or field conditions. From this time forward, however, we shall have data on the effect of each of twenty-one different combinations of fertilizers on the potato crop.

All our seed is treated every spring with formalin. Last year, experiments were started to test the relative value of formalin and corrosive sublimate on the yield and control of disease in potatoes. No blight has yet been observed in our potato crop, so that opportunity for studying the control of this disease has not presented itself.

Our crop is stored in a basement cellar, the temperature of which we aim to keep between 33 degrees F. and 40 degrees F. The potatoes lose less weight at the lower temperature and develop rather less decay.

Much additional work is under way now. The crop management practices such as dates of planting and rates of planting, distance apart of plants in the row and size of seed, have been under observation for two years.

In 1914 the earliest planting (April 30th), produced the largest return. This, however, is rather too early for planting the main crop. Two ounce sets from medium or large seed seems thus far to result in greater productiveness than the use of smaller sets or from the same size sets from smaller seed. It is our opinion that

smaller sets may with profit be planted when the soil and climatic conditions are all favourable. Sufficient data is not at present at hand to determine positively the best distance between the rows, or the best distance between plants within the row. Our present policy, however, is to plant the potatoes in rows thirty-two inches apart, and from

twelve to sixteen inches apart in the row. This practice, as pointed out, is more or less arbitrary.

During the past four years our yields have varied from approximately 100 bushels per acre in the dry year of 1914 to nearly 600 bushels per acre in the moist year of 1911, these yields in both cases coming from our fallowed land.

ALBERTA

BY GEO. HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE

EXCEPT in a few districts potatoes have not been looked upon as an important crop, i.e., a money crop, with the result that little attention has been paid to early planting and suitable varieties. Any time after seeding, too frequently, is considered good enough to plant. The result is that owing to the short growing season an early fall frost is liable to check growth and give an unripened yield. Late maturing varieties have been planted, frequently with the same result.

VARIETIES

So far as can be ascertained the following varieties are suitable for early cropping in the order named:— Irish Cobbler, Rochester Rose, Early Bovee, Early Ohio and Vick's Extra Early.

For a general crop:— Wee MacGregor, Gold Coin, Table Talk, American Wonder, Country Gentleman, Holborn's Abundance, Early Moonlight, Sutton's Satisfaction and Burbank.

Farmers, generally, are growing too many varieties, but owing to the fact that Alberta possesses more hill and dale, more diversified conditions because of its nearness to the Rocky Mountains, the question of suitability of variety is a big problem and every man is trying to work it out for himself. Such experimentations, however, inevitably lead

to difficulty in marketing, because of the inability to secure carloads of any one variety. The market here prefers white-skinned potatoes, medium in size and with small or shallow eyes.

SOIL

Owing to the large amount of decayed vegetation in the soil much of the land in the province is not as suitable for growing potatoes as could be desired. Here, as elsewhere, a fairly sandy soil, well drained, gives best results.

So far but little attention has been paid to growing potatoes for market, hence no definite place in a rotation or plan of cropping has been chosen for potatoes. On irrigated land in the southern portion of the province potatoes have given phenomenal yields on well worked alfalfa sod. In the south also a well worked summer fallow presents the ideal place for potatoes and the cultivation puts the land in excellent shape for wheat. Farther north good results usually follow on well worked timothy sod. As potatoes make a light draft on the moisture of the soil there is no reason why they should not be planted in soil that is to be summer fallowed. The cultivation given will put the land in as good condition for a wheat crop as a summer fallow.

Stubble land should be ploughed in the fall, packed in areas where the

rainfall is limited and disced to put in shape to retain moisture and pass the winter. It should be worked at intervals in the spring to kill weeds, conserve moisture and warm the land.

Flat cultivation is best in areas of limited rainfall. A certain amount of hilling may be necessary but unnecessary hilling means loss of moisture. Harrowing should begin as soon as the potatoes are planted and continued at intervals until the potatoes are well through the ground. Cultivation between the rows should then be continued to preserve moisture and kill weeds. If the early harrowing is well done there should be little need of any hoeing.

MANURING

Owing to the soil being new, practically no commercial fertilizers are used. They have been tried but the increased yield has not been sufficient to warrant the expense. Where manure has been used, well rotted barnyard manure has given the best results. It should be applied the previous year and well worked into the soil.

DISEASES

So far Alberta has been fairly free from any trouble with potato diseases. Scab is the most prevalent and is always worse where fresh barnyard manure is used. Treatment of the seed with formalin will give good results in eradicating scab and bi-chloride of mercury where blight has been noticed. Ravages by insect pests are nil; the potato bug not having found its way here in sufficient numbers as yet.

STORAGE

The inclination on the part of the farmer is to sell his crop out of the field and not to hold for a rise in the market in the spring. The more progressive farmers are beginning to build storage cellars or root houses, the more simple of these being excavations in a side hill, shored up with poles and covered with three alternate layers of straw and earth, with ventilation stacks.

The Department, realizing that farmers were growing too many varieties and that there were districts where the soil was highly suited to growing potatoes of a high quality, endeavoured to bring about improved conditions by starting co-operative experiments under the supervision of the *Vermilion School of Agriculture, the Provincial Demonstration Farm and the local agricultural societies at Vermilion and Stony Plain. The result at Stony Plain last year, where six different varieties were tried out on six different farms, has resulted in the creation of such interest that two varieties only will be planted this spring by a large number of the members of the societies. It is hoped that in this way it will be possible to market many carloads of uniform potatoes next fall. The society is arranging for a supply of seed.

Once definite results are obtained, this work will likely be extended to other districts. The province can grow good potatoes, if the right seed, care and attention are given.

*See AGRICULTURAL GAZETTE, January, 1915, p. 77.

BRITISH COLUMBIA

BY W. NEWTON, ASSISTANT SOIL AND CROP INSPECTOR

THE total potato production in British Columbia has steadily increased. Recognition of the high quality of potatoes from many districts is doing much to establish the potato as a staple money crop in the province.

FIELD CROP COMPETITIONS

The field crop competitions in potatoes has become an important phase of the work of the Department of Agriculture. Last year forty-two competitions in potatoes were conducted through the Farmers' Institutes. The announcement of this competition was published in a bulletin form containing a brief description of the most approved cultural methods, and copies were distributed to all members of Farmers' Institutes. This competition had in most cases the desired results. The competitive spirit led large numbers of farmers to handle their potato crop along approved lines. Many valuable demonstrations resulted, the more noticeable of which were fertilizing tests and the value of Bordeaux mixture as a spray. In many cases good results were also reported in using the "formalin solution" as a preventative for scab. The minimum size of a plot entered in the competition was one half acre. Awards were based on a field score.

A bonus is offered this year to any competitor who will send in a satisfactory statement of the cost of production of the crop entered. We feel that this will give the department valuable data as to which districts are suitable to profitable potato growing. The main object, however, is to encourage the farmers to keep crop records. In order to obtain uniform statements, forms are being supplied and the competitors are requested to fill in the data asked for.

BOYS AND GIRLS' COMPETITIONS

Apart from the regular competition in potatoes, twenty Farmers' Institutes held Boys and Girls' Competitions. These were conducted along much the same lines as the above. The size of the plot had to be exactly 1/10 acre. The awards in this competition were based on three scores, a field score, a score on a harvested exhibit of twenty pounds and a certified report score. The score cards were contained in the announcement of the competition and were made as educational as possible. This was especially true of the certified reports. On this report a list of questions was asked, to bring to the attention of each boy or girl every step that experienced growers take to ensure a good potato crop. In the same report questions as to expenditures and receipts drew to the children's attention the value of keeping records.

A stipulation worthy of note in this junior competition was that all competitors within an "Institute District" had to use the same variety. We feel that the large number of varieties in this province if reduced to a limited number of standard varieties adapted to the districts would materially assist in marketing, especially in the districts getting into the car-shipping class.

VARIETIES

We do not feel we are yet in a position to name the varieties that are best adapted to different districts. Carman No. 1, and Burbank have done well, Carman No. 1 on lighter soils and Burbank on heavier. The order of popularity in the crop competitions is an indication as to their merits. The order is as follows: Carman No. 1, Burbank, Gold Coin, Early Rose, Up to Date, Wee Mac-

Gregor and Money Maker. The three first are outstanding in popularity.

Copies of all field crop scores are kept on file and the Department has made use of them in recommending to persons desiring good seed those growers whose scores were outstanding.

POTATO CENTRES

Arrangements have been made for this season to introduce a good strain of Carman No. 1 to districts around Armstrong, Grand Forks and Kamloops. A field selection will be made during the coming season and will be continued from year to year

under our supervision. The object of this selection is to produce a supply of "Elite Stock Seed" for growers in the district. The growers will be enlisted in the Canadian Seed Growers Association and will be ultimately organized into a "Potato Centre."

FERTILIZER EXPERIMENT

The following fertilizer experiment was carried out at Errington under our supervision during 1914 on newly cleared land. The plot was drained with 6 inch tile 60 feet apart. Inasmuch as it was the first year under cultivation the land was not in good tilth. The soil was a sandy loam resting on a sandy clay sub-soil.

Plot No.	Area.	Treatment	Yield.
1.	$\frac{1}{3}$ acre.	100 lb. Nitrate of Soda	70 lb.
2.	$\frac{1}{3}$ acre.	233 lb. Superphosphates of Lime	40 "
3.	$\frac{1}{3}$ acre.	100 lb. Muriate of Potash	110 "
4.	$\frac{1}{3}$ acre.	600 lb. Nitrate of Soda	
5.		140 lb. Superphosphate of Lime	70 "
6.		Check Block..	30 "
		75 lb. Nitrate of Soda	
7.	$\frac{1}{3}$ acre.	75 lb. Muriate of Potash	100 "
8.		235 lb. of "A" Fertilizer	110 "
9.	$\frac{1}{3}$ acre.	700 lb. Lime	20 "
10.	$\frac{1}{3}$ acre.	60 lb. Muriate of Potash	110 "
		Stable Manure.	100 "

SPRAYING EXPERIMENTS (1914)

Four $1\frac{1}{2}$ acre plots, one at Hammond, two at Chilliwack and one at Ladner were treated as follows: $\frac{1}{2}$ acre sprayed five times; $\frac{1}{2}$ acre sprayed three times; and $\frac{1}{2}$ acre not sprayed, used for a check plot. The following is a summary of the results:

RESULTS OF SPRAYING EXPERIMENT

	Sprayed. 5-times.	Sprayed. 3-times.	Check. Not sprayed.
Hammond	3 65 tons.	3 6	3 32 tons.
Chilliwack	3 25 tons	4 tons.	3 1
Marketable discarded	31	26	31
Ladner marketable	5 85	5 6	4 1
Discarded	1 0	1 05	2 7

Bordeaux (4-4-40) was used as the sprays. The past season being unusually dry the late blight was not so prevalent. We therefore feel that the continuation of this experiment will secure valuable data as to the amount of spraying that is profitable.

STORING

The storage problem in British Columbia has not met with any serious difficulty. A cool, well-ventilated cellar or root-house which is perfectly dark is recommended. Too much stress cannot be put on

good ventilation. If there is not a good system of ventilation, slats can be nailed a little apart about 5 or 6 inches from the wall. A false floor with cracks between the boards can be put 6 inches above the permanent floor. This allows the air to circulate around and through the pile. If the pile is very large, slatted ventilators can be placed here and there from top to bottom. The temperature should be as low as possible without freezing, and at the same time the air should be as dry as possible.

In the dryer sections of British Columbia, the potatoes are often pitted. The pit that is recommended is 6 to 8 feet wide, about 8 inches deep and as long as needed. The potatoes are placed in the pit about 4 feet deep and covered with enough straw to keep the earth from coming through, and then about 1 foot of earth is placed on top of this.

A strip along the top is left uncovered for a week or two for ventilation. If there is danger of rain, this can be covered with sacking. When this strip is covered a small hole for ventilation is left every 8 or 10 feet. If in the winter time there is danger of freezing, the pit can be covered with some strawy manure, and the ventilation holes filled in.

MARKETING

The tendency of the crop competitions is to establish a standard variety in each district. This work coupled with the establishment of organized potato-growing "centres" we believe to be the foundation to successful co-operative marketing.

The importance of all phases of potato production is fully realized, and every effort to stimulate the production of this important food product will be made in British Columbia.

The first distribution of seed by the Department of Agriculture of British Columbia was to Kamloops: 1,200 bushels of wheat and 1,800 bushels of oats; to Vernon: 1,200 bushels of wheat and 1,800 bushels of oats; to Vancouver: 1,200 bushels of wheat and 1,800 bushels of oats, and to Nelson 150 bushels of wheat and 1,200 bushels of oats. The charge is 3 cents a pound for each variety of seed.

The outlook for live stock in British Columbia, according to Live Stock Commissioner, W. T. McDonald, of British Columbia, is exceptionally satisfactory. There is much activity both in the dairy and meat business, particularly along the line of the Grand Trunk Pacific and in the Nechaco and Bulkley valleys. Several large dairies have been opened in the fruit-growing section of Okanagan. The number of sheep is increasing. The milk tests being carried on by the Department of Agriculture are proving most beneficial.

QUEBEC

AGRICULTURAL LEGISLATION

AT the session for 1915 of the Quebec Legislature, recently brought to a conclusion, several bills relating to agricultural societies were passed, as well as a measure authorizing municipalities to make advances for the purchase of seed.

The Act relating to co-operative agricultural societies of 1909 was amended to give associations or directorates power to decide on the day for inspection, providing one such day be set per month.

The Act relating to the Provincial Dairy Association and to the manufacture of dairy products was amended to include two new paragraphs, the first defining the composition of the Association and the second authorizing it to divide the province into regions under approval by the Lieutenant-Governor in Council.

Provision is also made for the appointment of inspectors-general and assistant inspectors-general by the Lieutenant-Governor in Council, their duties being to superintend the production and supply of milk as well as the manufacture of butter and cheese. Other clauses relate to the election of directors, to the rules and regulations and to the advertising of meetings. A further provision calls for the appointment at every factory of a head butter maker, who shall be properly certificated. By-laws adopted by co-operative agricultural societies, relating to butter and cheese, cream and milk, must be approved by the Inspector-General. Societies can recover damages if supplied with unwholesome or sour milk. Sterilization is made compulsory. Reports of the operations of each factory must be made to the Minister of Agriculture on or before January 15th in each year.

Another Act requires the manager of every co-operative agricultural

society to make a report in triplicate of the state of affairs and to file one copy with the provincial secretary and another with the clerk or secretary-treasurer of the municipality.

Council Bill No. 109 is the Act relating to the aid that may be granted by municipalities for the purchase of seed grain and seeds during the year 1915. This measure authorizes the council of any rural municipality or any county council governing a territory not erected into a local municipality to take out of the funds of the municipality, or borrow, the sums necessary to fulfil the object of the Act, terms of repayment of the loans that can only be made to rate-payers to be fixed by the council.

AGRICULTURAL APPROPRIATIONS 1915-1916

Agricultural Societies	\$145,000
Agricultural Circles, encouragement of agriculture in general, including subsidy to South Shore Railway Company	110,000
The Agricultural and Horticultural Society of Montreal	500
Pomological and Fruit Growing Society of the Province of Quebec	500
Horticultural Society, Quebec	500
Council of Agriculture	3,000
Agricultural Schools	30,000
Veterinary Instruction	5,500
Domestic Science Schools	16,000
Dairy Society of the Province of Quebec	2,000
Dairy School of St. Hyacinthe, and working of farm	8,000
Grants to Butter and Cheese Syndicates, and Inspection of same	28,000
Towards the encouragement of the Dairy Industry generally	32,000
Encouragement of the cultivation of fruit trees, (Horticulture)	10,000
Official Laboratory of the Province of Quebec	2,000
Lectures on Agriculture	9,000
Journal of Agriculture	30,000
Encouragement to Poultry Raising	3,000
Provincial Agricultural Merit	3,500
Arbor Day	100
Exhibitions	32,000
Total	\$470,600

MAPLE SUGAR INDUSTRY

BY J. ANTONIO GRENIER, B.A., SECRETARY, DEPARTMENT OF AGRICULTURE

JUDGING by present appearances, we will have an early spring this year. A number of maple bushes are already reported to be tapped in Eastern townships. Therefore the three sugar-making schools of the Department of Agriculture will soon be open; considerable improvements were made in these schools during the summer with a view to increase their efficiency. Requests for admission from farmers or farmers' sons are received daily, and we expect to have a large attendance during the next sugaring season.

In order to reach a large number of our farmers, a number of articles on sugar making were printed this spring in the JOURNAL OF AGRICULTURE and a circular giving practical hints, easy to follow, was distributed.

It is the intention of the Minister to have practical demonstrations given by an expert in some of the sugar houses of the province, and particularly in the counties of Portneuf and Champlain which are remote from the sugar-making schools. One of our lecturers who is attending short courses that are now being given in the various agricultural centres along the lines of the Canadian Northern and the Canadian Pacific railways between Quebec and Montreal, has already visited some sugar houses in order to encourage the farmers to improve their material and their methods.

The convention of the Pure Maple Sugar and Syrup Farmers' Co-

operative Association was held last summer in the county of Beauce which is well known for its large number of sugar plants. The lectures that were given at the convention and the work of our sugar-making school at Beauceville will help to improve the quality of the products.

This association has made arrangements with the Quebec Cheesemakers' Agricultural Co-operative Association, who have warehouses in Montreal, for the sale of the sugar and syrup manufactured by its members. The chief co-operative associations of the province have also been invited to send their products which will be graded by an employee of the Department of Agriculture and sold according to the quality, as is already done for butter, cheese, eggs, poultry and cured meats. These courses which are given in the schools for the maple-bush owners; the demonstrations; the lectures; the associations through which the products are sold according to their quantity and not at a price arbitrarily set by the trade; the new law of adulteration which protects the producers as well as the consumers; the utilisation of the very profitable by-products; all these factors will surely give a new life to this splendid industry of maple products which is, we might say, a specialty of our province, and they afford the hope that the production will double in a few years.

NOTE: -This article was written by Mr. Grenier, on March 17, 1915.

The man that can see no patriotism in production when the Empire is struggling for existence is himself most in need of patriotic stimulation.—C. C. James.

ONTARIO

DEMONSTRATION LECTURES FOR WOMEN'S INSTITUTES

BY GEO. A. PUTNAM, B.S.A., DEPARTMENT OF AGRICULTURE, TORONTO, ONT.

THE enthusiastic interest which the Women's Institutes have taken in the itinerary Demonstration-Lecture courses in "Food Values and Cooking," "Sewing", and "Home Nursing" provided by the Ontario Department of Agriculture for the past three years, led to a new experiment this year. Instead of holding a class at five different points in a district each week for ten weeks, a teacher was sent to give a two to four weeks' course at one central point, the lessons to be free to any woman or girl in the district, whether, an Institute member or not. The results have gone beyond our highest expectations, and have convinced us that the people are ready and waiting for the extension of this work.

The prospect during the earlier part of 1914 was for a rapid development of the Demonstration-Lecture feature of Women's Institute work during the fall and winter of 1914-15; but after the outbreak of war, the Institutes became so engaged with Red Cross, Belgian Relief and various forms of local relief work that they would not take the time, except at a few centres, for systematic instruction. The Department did not wish to discontinue this excellent feature of work; so urged a few centres to take advantage of the instruction, which has heretofore been given at a small charge, but was this winter offered free of tuition.

Courses in sewing have been given at some twelve points, while instruction in food values and cooking has been given at seven

centres. One of the most successful of these was that held at Aylmer, Elgin County, January 26 to February 19, 1915. This course included twenty-six lessons in Domestic Science: sixteen morning lessons planned especially for girls and ten afternoon lessons for the same girls as well as experienced housekeepers. The last six afternoons were devoted to lectures from special instructors in dairying, poultry-raising and gardening. The subjects were arranged after the plan of the Macdonald Institute short course in Domestic Science, the programme for the afternoon lessons including:

- 1.—Fruit—Typical methods of cooking; combinations; different ways of serving fresh fruit.
- 2.—Vegetables. Fresh, starchy and dried.
- 3.—Milk. Soups, puddings and combinations, with especial relation to infant, children and invalid diet.
- 4.—Cereals and Cheese.—Various methods of cooking; their high food value compared with other more expensive foods.
- 5.—Eggs—Correct methods of cooking, variations in methods; storage.
- 6.—Meat—Roasting and broiling; braised dishes, stews and soups, uses of the different cuts, and food value compared with other foods.
- 7.—Baking-powder breads.—Yeast. Bread and Fancy Breads.
- 8.—Cake and little Cakes.
- 9.—Puddings and Desserts.
- 10.—Salads.

The morning lessons were arranged in correlation with these, going a little more fully into elementary principles and including such additional subjects as Invalid Cookery, Meat Substitutes, Made-Over Dishes, Hot Supper Dishes, Pastry Croquettes, Table Setting and Serving, etc.

The Aylmer women have reflected credit on their Institute by the business-like way in which they carried out their part of the contract. The Local Institute is required to provide and equip the room where the classes are to be held, and to furnish the supplies required for the demonstrations. They are also required to advertise the course throughout the immediate district. In this case, they rented a club-room in an office block, put in a three-burner oil-stove, a work-table and chairs, and then circulated printed programmes advertising the course. The attendance at the first morning class was 34, with 78 in the afternoon. In a few days this had increased to 86 in the morning, and in the afternoon 200, and some more who couldn't get in. On the last evening a hot supper was given at which the Institute realized enough to pay all the expenses of the course with a considerable surplus for patriotic work. It might also be added that during the course ninety-six new members joined the Institute.

A new feature in short course work was introduced in the form of a written examination for those who had taken the complete series of lessons. This also was an experiment, and the question of writing purely voluntary on the part of the students. The paper set will give some idea of the work covered. The questions were:

1. Explain the uses of proteids, carbohydrates, fats, mineral matter and water in the human system, and name some of our common food stuffs in which each of these principles is found largely.
2. Give the recipe, and explain definitely your method of making any two of the following:
 - (a) Tea biscuits.
 - (b) Plain pastry and puff pastry.
 - (c) Cheese croquettes.
3. Make out suitable menus for the three meals a day for one week in July. (1) For a farm family where there is access to a good kitchen garden, a dairy, eggs, and a beef ring or other fresh meat supply, or (2) for a family of five in town

where \$400 a year can be spent for the food supply.

4. Explain with *reasons* for your method in each case.
 - (a) How you would pan broil a steak.
 - (b) How you would make a beef stew.
5. Of what special nutritive or medicinal value is each of the following?
 - (1) A salad of green vegetables.
 - (2) The same salad with nuts added.
 - (3) Beef tea.
 - (4) Course vegetables like spinach or cabbage, and Graham bread.
 - (5) A macaroni and cheese dish.
6. (a) Give definite directions for making
 - (1) Any two light desserts.
 - (2) Any two hot supper dishes.
 (b) Give five salad combinations.
7. What are the characteristics of a good waitress. Give five general rules to remember in table "serving."

The results of this examination were gratifying indeed. The only means of preparation the girls had was through the lessons, with the use of demonstrations and charts, and the reviewing of the notes they took each day, but the following answers taken from four different papers show something of the thoroughness with which they grasped the ideas.

"Proteid in food is that which builds and repairs worn out tissue. It is found largely in lean meats, eggs, cereals, milk, dried beans, cheese, etc.

"Carbohydrate is that in foods which supplies heat and energy. It is composed of starch and sugar. It is found largely in potatoes, parsnips, beets, grains, etc.

"Fat is that in food which supplies heat and energy to the body. It is found in fat meat, bacon, cream, cheese, etc.

"Mineral matter or mineral salts is of use in the system to build body tissue, blood and muscle and nerves. The lime in food also builds up the bone. The mineral salts also act as regulators. They are found in lettuce, cress, spinach, celery, apples and other fruits. Lime is found in cereals and milk.

"Water.—Its use is to act as a regulator, to flush out the system,

and to carry off impurities. It is found largely in vegetables such as onions, lettuce, cabbage, etc., also in raw fruits such as oranges, lemons, apples, peaches, etc.

"Recipe for Puff Paste.

2c. flour; $\frac{1}{4}$ c. lard; $\frac{3}{4}$ c. butter;

$\frac{1}{2}$ teaspoon salt.

About $\frac{1}{4}$ c. ice water and 1 teaspoon lemon juice.

"Sift the flour and salt several times to get air into it, and make it light. Add the lard, cutting it in with a knife as well as you can, then finish rubbing it in with the tips of the fingers. Then add the water very gradually, using a knife to mix it through, until the dough is of the right consistency to handle. Put on the bake board, and roll very lightly. When rolled $\frac{1}{3}$ inch thick, dot part of the butter over half of it. The butter should be creamed with a spoon until it is waxy, and will work into the dough easily. Fold the paste over, fold again in three layers the other way, and roll again till the butter shines through a little, but not till it begins to come through. Fold it over and put it away to chill. When chilled, roll again, dot butter over half the dough, fold, and roll as before. Do this four or five times, or until you have the butter all worked in. When you roll the paste keep it as nearly square as possible so that it is easy to fold. Roll very lightly. Always roll the one way. Never turn the dough over. Keep it cold. Never use puff paste for the bottom crust of a pie.

"To Pan-broil a Steak.--Have your pan very hot so that when you place your steak in it, it will be quickly seared over, then turn and sear the other side. Be sure to never pick it with a fork so that any of the juices will be lost. After it is seared over, cook it rather slowly. When it is done sprinkle with salt and a little pepper, and you may rub it over with a little butter and lemon juice.

"Reasons.—Sear it quickly so that the little tubes will be sealed over, and all the juices will be retained in the meat. Do not sprinkle salt on at first, for it will draw out the juices. Do not turn with a fork else you allow some of the juices to escape. Finish cooking slowly so as not to toughen the proteids."

One of the answers to the question about the special medicinal or nutritive value of certain foods was:—

"A salad of Green Vegetables.

The green vegetables such as lettuce or other above ground vegetables have a great amount of mineral salts in them. Therefore when eating green vegetables this would purify the blood, and would also help to clear out the system.

"The same salad with nuts in it.--- Nuts and especially walnuts are great in food value having so much proteid and fat. So therefore if we had nuts in a green vegetable salad, we would get the fat and proteid besides the mineral matter, and it would be a nourishing dish as well as a medicinal dish.

"Beef tea.--- When making beef tea our main idea is to get all the food we can out of the meat into the water, therefore beef tea would be very nourishing if we left the flakes of proteid in it. It is also very good for a sick patient, as there isn't hardly any digesting to do. If the proteid is strained out, the beef tea is only a stimulant and has no nourishment in it.

"Coarse vegetables such as spinach or cabbage, and Graham bread.— These are all valuable for the cellulose that is in them, that is the fibrous material. For example if you scrape a turnip and then squeeze the pulp through a cloth, the cellulose would be the particles left in the cloth. It is indigestible, but forms a bulk in the intestine which stimulates the muscles and helps carry away the waste and therefore helps to overcome constipation. We

should take a lot of these foods mentioned.

"Macaroni and Cheese. - Cheese is about one-third proteid and one-third fat. Macaroni is made up of nearly all starch. Therefore this would be a well-balanced dish and very nourishing."

But while we may be most enthusiastic over the possibilities of this work among the young women living out of reach of any other form of technical education, not so much for the specific information given,

as that it starts an intelligent interest in things of the home and inspires a desire to make a profession of housekeeping—we appreciate just as much the immediate value to the women who have charge of homes now. The interest which the clever, capable, experienced women of the community have taken in this course, promises that it may become one of the most practical and far reaching lines of college extension work yet undertaken in Canada.

Many people do not plant trees because it requires so many years for them to grow to maturity; there are more who are selfish and not willing to go to the trouble of planting trees because they feel that they will not get much benefit out of them. The right view for us to take is that we should do those things which not only help ourselves, but which also add to the comfort and happiness of those who come after us. Boys and girls who plant trees will live to enjoy them and at the same time they will have the satisfaction of knowing that they are doing something which will benefit others for many years to come. *Charles W. Fairbanks.*

I love sunshine, the blue sky, trees, flowers, mountains, green meadows, sunny brooks, the ocean when its waves softly ripple along the sandy beach, or when pounding the rocky cliffs with its thunder and roar, the birds of the field, waterfalls, the rainbow, the dawn, the noonday, and the evening sunset— but children above them all. Trees, plants, flowers, they are always educators in the right direction, they always make us happier and better, and if well grown they speak of loving care and respond to it as far as it is in their power; but in all this world there is nothing so appreciative as children, these sensitive, quivering creatures of sunshine, smiles, showers and tears.— *Luther Burbank.*

Hon. Duncan Marshall, Minister of Agriculture for Alberta, at a horse show luncheon recently held at Edmonton, Alta., in speaking of a visit he paid to Belgium before the devastation, said the rule in Belgium was that where animals winning prizes were sold out of the country, the prizes were to be returned. Mr. Marshall thought the rule might profitably be applied in Alberta, as it would have a tendency to keep the best stock at home.

PART III

Provincial Departments of Education

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF EDUCATION

DOMESTIC SCIENCE IN THE SCHOOLS.

NOVA SCOTIA

BY A. H. MACKAY, B.A., SUPERINTENDENT OF EDUCATION

DOMESTIC Science was first introduced into the schools of Nova Scotia in 1897. In 1900 the Training Department, in affiliation with the Provincial Normal College at Truro, was established for the training of teachers. Ever since that time all the teachers graduating from the Provincial Normal College have taken an elementary course in either Domestic Science or Mechanic Science. The Domestic Science Teachers' Training Course was also established at the same time by the Board of School Commissioners for the town of Truro, in affiliation with the Provincial Normal College, and with the approval of the Council of Public Instruction, for the purpose of furnishing a thorough training to those who wish to become teachers of Domestic Science. The following courses of study are conducted at the Truro School of Domestic Science: Food and cookery; household chemistry and bacteriology; first aids and home nursing; hygiene and home sanitation; laundry textiles and needlework; household economics, including marketing and accounts. This school is open, free of cost, to all who hold a first-class license, or a teacher's pass, or the

Provincial High School Course of Grade Eleven, and on the Science of Grades 9, 10 and 11. Others will be admitted by special arrangement.

Since the year 1900, grants, not to exceed \$300 per school, may be earned from the Provincial Funds, the grant being fifteen cents, for each two hour session, per pupil. This is authorized by section 74 of the Education Act.

During the school year ended July, 1914, the expenditure on Domestic Science was \$11,254.33, of which \$4,747.65 was from the Provincial treasury.

As the number of teachers attending the Normal College has every year been increasing—318 last year—we have been considering the policy of separating from the joint school and erecting an additional building on the Normal College grounds; plans and estimates were prepared for the consideration of the Government, but the difficulty of finding enough money prevented the plans from being carried out.

In the meantime, the College of Agriculture (about a mile distant) devoted a portion of the funds received from THE AGRICULTURAL IN-

STRUCTION ACT grant to erect a special building for courses in Domestic Science under its own special direction as a part of the general work of the Agricultural College. It is now being proposed to share the use of this building with the Provincial Normal College for any further extension required. The only drawback is the greater inconvenience of arranging a working time table with class rooms a mile away, as compared with those at present which are on the Normal College grounds.

To sum up: our policy of requiring all the female teachers graduating from the Provincial Normal College

to take an elementary practical course in Domestic Science, and our policy of Domestic Science Training School preparing teachers for the special Domestic Science diploma (all of which have been in full operation since 1900) will still be continued with extension of accommodation and enlargement of training.

In addition the College of Agriculture is making preparation for the addition of Domestic Science courses to its various other courses under the special direction of Principal Cumming and its own faculty of Instruction. It will necessarily be further enlarged for this purpose.

NEW BRUNSWICK

BY FLETCHER PEACOCK, DIRECTOR OF MANUAL TRAINING AND DOMESTIC SCIENCE

NO money from the Federal grant has been spent on the teaching of Domestic Science in the public schools of New Brunswick. At the summer course for teachers held at Woodstock, N.B., in 1914, a very limited course was provided in this subject, and the teacher was paid from funds provided under THE AGRICULTURAL INSTRUCTION ACT.

Practically all the cities and towns in New Brunswick maintain Domestic Science departments in connection with their public schools. The Government pays the teacher in each case an annual grant of two hundred dollars and bears half the cost for the equipment of the class room. None of the villages or country sections have taken up the subject yet, although our Education Act provides for Government assistance should they wish to do so.

In about half of our Domestic Science Schools the subject is taught to grades six to eleven inclusive. In the remaining ones only grades six to eight inclusive are provided for. In all cases each student takes one two-hour lesson per week in plain sewing, cookery, or laundry work.

The Department of Education of New Brunswick recognizes and employs the teachers certificated in Domestic Science by the following schools: Macdonald Institute, Guelph, Ont.; Massey-Trebbel School of Household Science, Toronto; Macdonald College, Que.; Mt. Allison College, Sackville, N.B., and Acadia College, Wolfville, N.S. In most cases our teachers have had Normal training and experience in grade teaching before they specialized in Household Science. After teaching the latter subject for a year or more many avail themselves of the summer courses offered at Columbia University, New York.

The method of teaching followed is wholly practical. Each pupil has her own individual equipment and works out her problem independently under the teacher's supervision. Class instruction is given by the teacher in her demonstrations at the beginning of each lesson. It is the aim of the teachers to make the work of the greatest possible utility and to make it relate as directly as may be to the actual work of the homes of the pupils.

QUEBEC

BY REV. O. E. MARTIN

THERE are now 45 schools of Domestic Science in the province of Quebec. Most of them have, so to speak, been established by the provincial Department of Agriculture and all of them receive special encouragement from the department. The object of these schools is to make good house-keepers of our girls, to make them proficient in women's handicraft, to teach them habits of order, economy, simplicity and discrimination. To help them to carry out this programme, the Department of Agriculture grants to each school a yearly subvention of \$300 which is to be spent on organization and management.

All these schools, with the exception of two, the one annexed to the Macdonald College of St. Anne de Bellevue and the other in Montreal are managed by nuns of various orders.

These worthy sisters, in order to become more proficient in their work, have not hesitated to take special courses and to secure the required diploma. At some of the schools, the Principals have even secured the services of lay teachers, of well known ability, in order to give more complete and more efficient training.

Each year since these schools were established the teachers of domestic science have been invited by the provincial Department of Agriculture to meet at the domestic science normal schools of Roberval and St. Pascal, to take special courses in domestic economy and agriculture, in order to prepare themselves better to perform their task.

All teachers from all quarters have responded to these invitations and nuns of all ages have been seen on the benches of these normal schools, like ordinary pupils, following the

lessons with close attention in order to impart the same information to the pupils of their own schools.

The programme of the domestic science schools includes instruction and practical demonstration in the following subjects:—

Cooking; general house-keeping; economical self-keeping; cutting; sewing; darning; mending; folding clothes, linen, etc.; pressing suits keeping of the wardrobe; laundry work; ironing; starching; spinning; weaving; netting; house-keeping; milking; care of milk; skimming; manufacture of butter and small cheese; gardening; bee-keeping, fruit culture; poultry keeping; making preserves; home medicine; inspection of various tissues, etc.

EQUIPMENT

The following equipment is found in the schools: A special kitchen and kitchen utensils, charts showing the various meat animals on foot or cut up; very good tables showing the composition of the various animal or vegetable matter used for human consumption, book of receipes, etc. The equipment of the sewing room is as follows: Linen closets, tables, sewing machines, blackboards, squares, measures, etc. The laundry and ironing room are also generally well equipped.

In addition to the washing machines, run by motor, there are other implements of more common use, such as wooden or galvanized iron tubs, washing boards, etc., for the use of the pupils.

Most of the schools also endeavour as far as their financial means permit, to keep before the pupils by means of good sets of charts, the articles which they will have to handle in practice. General botany, horticulture, arboriculture, agriculture,

bee-keeping, have of course a prominent place in these charts.

The general house-keeping work gives ample daily practice in cleanliness, order and good taste. But the thousand and one details of house-work do not prevent the sisters from teaching their pupils the knowledge in outside work that a skilful house-keeper should possess. The activity of the pupils find ample scope for action in the stable at milking time, the garden, the poultry house, the apiary and the orchard.

Each school also has a modern poultry house, and some have splendid flocks of fowls. The preparation of grain and mash, the cleaning of nests and roosts, the ventilation, etc., etc., are all part of the daily programme. With the poultry house there are also the incubator, the brooder and the care of eggs and chicks. The pupils, at least the most advanced, know all about these things. But they are quite as much interested in gardening work as in poultry work. Most of them take a real delight in conducting a hot-bed,

examining the seeds, seeding, preparing the soil, transplanting, weeding, etc. The apiary, the small orchard and the growing of flowers are also the object of the attentive care of the pupils.

In all domestic science schools the teachers lay great stress on the importance of cleanliness in the production and conservation of milk. The pupils are also trained in economy; they acquire habits of order, cleanliness and sound judgment.

Domestic book-keeping is also continually practised.

The total attendance at the domestic science schools of the province, including the schools at the Macdonald College and the one at Montreal, was 4,322 pupils. These schools were inspected last summer by a priest of the archdiocese of Quebec, under the direction of Honourable Mr. Caron, Minister of Agriculture.

The selection of a member of the clergy for this work has been viewed with favour by many people.

ONTARIO

COMPILED FROM DEPARTMENTAL PUBLICATIONS.

IN a general way the Department of Education for Ontario attaches great importance to the subject of Household Science and provides facilities for its practice. It is the intention of the Minister, Hon. R. A. Pyne, to encourage the study throughout the province both in urban and rural schools. Instruction is given at day and evening classes where opportunity offers. A regulation provided is that no grant shall be made for household science unless at least provision has been made for sewing, cookery, sanitation and hygiene. When the time of one teacher is occupied for five and a half hours of each of five days in the week the grant is \$120 per annum. When it is less the amount

is decreased and when more it is increased. In the distribution of the grant it is required that the maximum recognized value of the equipment for the different departments shall be as follows:

Cookery, Sanitation and Hygiene	\$500
Hand and Machine Sewing	250
Laundry Work	150
Library	100

The Department also pays the following proportions of the total salaries of the Household Science night classes: In cities with a population of 150,000 and over, one-sixth; in other cities, one-third; in towns, one-half, and in villages, two-thirds.

For the qualification of teachers,

spring and summer courses are held at the Household Science Department, University of Toronto, leading to certificates in Elementary Household Science. The work for a certificate is covered in one spring session or in two consecutive summer sessions. Students who are entitled to qualify for certificates are:

Grade A Normal School students who have passed the final examination of the Normal Schools and have taken the prescribed course in manual training at the Ontario Agricultural College, Guelph, or in household science at the University of Toronto, and have passed the prescribed final examination.

Other Normal School students who have taken the High School course in manual training or in household science and have passed the final examination.

Teachers who possess first, second or third class certificates, who have taken the prescribed courses in household science at Toronto University or the Ontario Agricultural College at Guelph, and have passed the prescribed final examinations.

Interim ordinary certificates in household science are granted to those who have taken the household science course at the Macdonald Institute at Guelph.

Special provision is made for village or rural schools unable to make use of the general regulations by which grants are conferred; a first grant of \$50 being made for qualified instruction and a second grant of \$30 on approval by the Minister. A grant of \$30 will also be added to the salary of the teacher

on a report of satisfaction by the inspector of household science.

The course includes:—

The House:—Purpose, location, general ideas concerning use and furnishing rooms, methods of cleaning, laundrying, etc.

Foods:—Elements required by the body, sources, food value and digestion of these; analysis of common foods—milk, eggs, meat, fruit, vegetables, cereals; effect of these in food value, digestibility and flavour.

Cookery:—Construction and care of stoves; fuels; principles and practice of each method of cooking—boiling, broiling, steaming, frying, baking; food combustions; flour mixtures; lightening agents; table service.

Bacteriology:—Occurrence and nature of bacteria; sanitation based on this knowledge; preservation of foods.

Home Nursing: The ideal sick room (location, furnishing, ventilation, heating), care of the patient (bath, bed, clothing, food).

Sewing:—Study and application of different stitches, basting, running, stitching, back stitching, combination stitch, overcasting, top sewing, blanket, herringbone, feather-stitching, mending, darning, button-holing, hemming, doll's apron.

In the advanced course marketing entertaining and the keeping of household accounts are added to a review and progress of the first year's work.

Lectures and demonstrative lessons are given from time to time at different points.

MANITOBA

BY R. FLETCHER, B.A., DEPUTY MINISTER OF EDUCATION

THE Department of Education in this province makes a grant of 50 per cent of the amount spent in equipping a department for Household Science work, with the proviso that our maximum grant shall not exceed \$400 for one department. We also pay the same grant per day in the case of special teachers of Household Science as we pay in the case of the ordinary teacher in the grades. We have been endeavouring to secure a larger daily grant for these special teachers, but so far we have not succeeded. We are urging our schools to introduce

Household Science wherever possible, and we have made fair headway in the matter of sewing, which is not an expensive course to introduce, and which the majority of our regular day school teachers are equipped to teach.

We have advocated the grouping of two or more towns or villages, and the employment of a special teacher for the group; and I think we should accomplish something along these lines if we had funds to enable us to make a reasonable grant towards the salary of such a teacher.

SASKATCHEWAN

BY D. P. MCCOLL, B.A., DEPUTY MINISTER OF EDUCATION

RESPECTING the policy of the Department of Education in the matter of instruction in Household Science I may say that it has been incorporated into our courses of study for both public and high schools. In the lower grades of the public schools the main stress is laid on sewing; in the senior grades and in high schools on cookery.

In order to encourage boards of trustees to make provision for this subject, grants are paid by the department to schools that provide the necessary equipment and accommodation and give satisfactory instruction therein.

In so far as the teachers-in-training at Normal Schools are concerned Household Science is regarded as an essential part of the course of training. In addition to the training they receive at the Normal School, courses are being prepared for their guidance upon taking charge of

schools and particularly schools in rural districts where special efforts are being made to direct teachers in this work under such conditions as exist in rural communities. It is the intention of the department to keep in touch with the work through inspection, circulation of bulletins, circulating libraries, etc.

In order to more thoroughly organize the work in all the classes of schools and give the subject the attention its importance deserves a directress for the province has recently been appointed and she will enter upon her duties at an early date. In addition to instruction at the Normal school these duties will include the general supervision, inspection and direction of the work in schools, attendance at teachers' institutes and conventions, and the taking of such steps as may be necessary to make Household Science a vital part of our educational system.

ALBERTA

BY JAMES C. MILLER, B.Sc., PH.D., DIRECTOR OF TECHNICAL EDUCATION

THE introduction of household arts including domestic science and domestic art into the course of study for the public schools of Alberta was officially provided for at the time of the revision of the course of studies for public schools in 1911. In both Calgary and Edmonton a beginning had already been made and several centres were in operation. While at this time the work was given a place on the course of study and the board were granted the permission to spend the necessary money to have the work carried on, no provision was made for special government grants. At the beginning of 1913 departments of household arts were organized in each of the provincial normal schools. Miss McCaig, formerly instructor in household arts in the North Bay Normal School, Ontario, took charge of the department in the Calgary Normal School and Miss Margaret Stewart, formerly instructor in household arts in the Calgary public schools, took charge of the department in the Camrose Normal School. During the normal school course the students are given two hours' instruction per week in domestic science and one hour instruction per week in domestic art. The shortness of the normal school course makes it impossible to do more than to introduce the students to the subject and give them an idea of its place and value in the education of children. When the supply of teachers available is such as to make it possible to lengthen the regular normal school course—there are indications that this will be the case in the course of a year—a much more satisfactory course in these subjects for teachers in training can be provided.

In order to give the teachers additional training in the special subjects including domestic science and domestic art the Summer School for

Teachers was organized in 1913 at the Provincial University. The courses are planned in such a way as to make two successive summers' work in a given subject a complete unit. The total attendance at the Summer School for 1913 was 80, and for 1914, 150. Sixty-nine teachers have completed one summer's work in domestic science or domestic art. A summer school enrolment of over 300 is expected for 1915 and it is probable that a large number will take the first year's work in household arts and that practically all of those who have completed the first summer's work will undertake the second summer's work in the subject.

The development of the work in full has up to the present been limited to the cities. In both Calgary and Edmonton the number of centres and instructors has been increased so as to make it possible for all of the girls of Grades VII and VIII to receive their instruction in this subject each week. Both Medicine Hat and Lethbridge provided one domestic science centre and employed the services of a specialist.

In the autumn of 1914 the policy of the Provincial Government in regard to technical education as a whole was more definitely formulated and a general scheme of provincial aid for the development of instruction along technical lines was outlined. As an integral part of the scheme provision was made for a special grant for the encouragement of instruction in household arts. The schedule of grants in so far as it affects this subject is as follows:

(A) In rural and village school districts:

1. To the school board: An annual grant equal to 50 per cent of the value of approved equipment up to a maximum grant of \$15.

(2) To the teacher: An annual grant of \$20.

(B) In any school district including a town or city in which fewer than 30 teachers are employed:

(1) To the school board: An annual grant equal to 10 per cent of the value of the approved equipment up to a maximum grant of \$100 exclusive of grants earned under Section 18 of The School Grants' Act.

(2) To the teacher responsible for such instruction and giving full time service to the board: An annual grant of \$50.

(C) In any school district including a town or city in which at least 30 teachers are employed:

(1) To the school board, for each instructor or supervisor of Household Science and Art in the employ of the board and giving full time service in these subjects: An annual grant equal to that earned for the board by a teacher in charge of a regular classroom. (Section 18- The School Grants Act).

NOTE: "Section 18 of the School Grants Act provides that all the teachers of special subjects shall rank as regular teachers for the purposes of the government grants." This means that a teacher giving her full time to household arts will

earn for the school board as much grant as a teacher in charge of one of the regular classrooms.

Plans for the introduction of this subject into the high school course of study are now under consideration and definite steps in this direction will be taken during the present year.

The development of instruction in household arts in the rural, village, town and city public schools and in the high schools, special provincial assistance to encourage the introduction of the subject and to help in maintenance, the extension of the courses in household arts now offered at the normal schools, to the further development of the work of the Summer School for Teachers, and as soon as possible the provision for the training of specialists, are the main features of the plan of the Department of Education for the further development of this division of educational service.

BRITISH COLUMBIA

BY ALEXANDER ROBINSON, SUPERINTENDENT OF EDUCATION

IN thirteen cities of this province Domestic Science is taught in thirty-two centres.

As we have had no means of training Domestic Science teachers, all our instructors come from the Eastern States, the Eastern Provinces, or from the United Kingdom. The Normal School, however, just erected in Victoria, has the necessary equipment and housekeeping rooms for such training, and this may be undertaken at some future date.

DOMESTIC SCIENCE REGULATIONS

The regulations for Domestic Science are as follows:--

Every instructor must hold a British Columbia instructors' certificate of qualification.

Each applicant for this certificate

must have had two years' training, hold a satisfactory diploma from one of the recognized training colleges in Canada, the United States, or the United Kingdom, and hold a public school teachers' certificate, or have had other approved professional standing. Every application for a certificate must be accompanied with the usual fee of \$5 and a satisfactory testimonial certifying to the good moral character of the applicant.

Rules relating to Domestic Science centres:--

1. Where Domestic Science centres are established, attendance is compulsory and must be continuous throughout the school-year. The hours of instruction in Domestic Science shall be as defined in Article 1 of the Rules and Regulations for the government of Public Schools.

Girls, from distant schools, in attendance at the morning session, may be dismissed at 11.45.

2. A three years' course of Domestic Science should be taken in the public schools.

3. All pupils in the entrance class and in the two classes below the entrance class shall take Domestic Science. Classes doing parallel work in other subjects shall do parallel work in Domestic Science.

4. Attendance registers, records of lessons, an inventory of equipment, and a visitors' book must be kept and be open for inspection at all times.

5. Expense sheets for food and other materials, exclusive of heating, lighting, and permanent equipment, should be sent to the secretary of the Board at the end of each month, also an attendance sheet.

6. Only one course of work will be recognized for all the schools in the one city.

7. Domestic Science instructors shall be subject to the same general regulations as Public School Teachers.

8. The principal of the public school at which a Domestic Science centre is situated shall have supervision over the general discipline of all classes in attendance at that centre.

9. Plans for Domestic Science buildings must be submitted to the Department of Education for approval.

10. All courses of work in Domestic Science must be submitted to the Education Department for approval. Needlework to intermediate grade and senior grade pupils may be included in the course.

FIRST-YEAR COURSE

Home management; home nursing, theory and practice; laundry-work, theory and practice.

SECOND-YEAR COURSE

Junior cookery, theory and practice.

THIRD-YEAR COURSE

Senior cookery, theory and practice

Diplomas are awarded by the Department of Education to pupils who complete the course prescribed for Domestic Science. Female candidates for high school entrance examinations from schools in which instruction has been given in Domestic Science must hold Domestic Science diplomas or fulfil departmental requirements as to attendance and work.

To the Board of School Trustees in rural districts, and to the Municipal Corporation of any municipality whose board of School Trustees provide suitable accommodation for Domestic Science in connection with the school or schools under their jurisdiction, the Council of Public Instruction grants a sum of not less than three-fourths of the total amount expended for the necessary equipment.

The total per capita grant for school teachers is also paid for Domestic Science teachers, viz.:-

To cities of the 1st class	\$360
To cities of the 2nd class	425
To cities of the 3rd class	465
Rural districts	480

In addition to this, a supplementary grant of one dollar for every dollar by which the salary of the teacher is increased is also paid; but in no case must this supplementary grant to be paid by the Government exceed one hundred dollars.

SUMMER SCHOOL FOR TEACHERS

At the Summer School for teachers held from 6th July to 1st August, 1914, we had 113 students attending with four instructors in charge. Good practical courses in needlework and cooking were covered. Lectures

were given on foods, sanitation, personal hygiene, the home and household decoration, textiles, etc.

Return transportation was paid from the homes of the students, and one dollar per day towards living expenses.

Thus it will be seen that the Department of Education considers it important that instruction in Domestic Science be given to every girl who attends the ordinary day school. They also look with favour on the instructor with an education liberal

enough to use the history lesson of the school to throw a light on the suffering of the races through ignorance of hygiene; the geography lesson, to draw attention to the influence of environment of food, clothing, occupation, and disease; the physics to show the understanding of the problems of ventilation, heating, cooking, and cleaning; and the subject of Domestic Science as embracing everything which makes for right living and the beautifying of human lives.

RELATIONSHIP OF THE SCHOOL GARDEN TO THE CLASS ROOM

NOVA SCOTIA

BY L. A. DEWOLFE, M. SC., DIRECTOR RURAL SCIENCE SCHOOLS

THE school garden helps the class-room in, at least, two ways. First: it gives that healthful exercise so necessary to school children, at a time when they most need it. In this, too, it furnishes variety, and breaks the monotony of school life.

But the second and most important consideration, is that it vitalizes school work. The principles of mechanical drawing are mastered while drawing a plan of the garden to scale. Business methods are learned when buying the seeds; and, later in the year, when banking the profits. Many a boy gets his first lesson in good manners and community welfare when he is taught not to walk in his pupil-neighbour's garden plot.

The lessons on soil physics, in connection with conservation of moisture, make a tangible introduction to general physics in the class-room. Identification of weed-seedlings and garden seedlings is the first step towards field botany. The control of these leads at once to economic botany.

What better arithmetic problems can be given than the boy's own problems to find how much seed or how much fertilizer his garden requires, when tabulated amounts are per acre?

The insect pests furnish good lessons on Entomology. The insecticides and fungicides form a natural basis for lessons in chemistry. The covering of plants to protect from late spring frosts introduces a phase of physical geography not often well taught.

The written descriptions of garden operations furnish unlimited exercise in English composition. No drawing lessons could be more attractive than those based on the garden and its products; and no reading should be more suitable than some of the best garden compositions written by the students.

Commercial geography will, perhaps, be helped more than any one subject.

In the hands of the skilful teacher, the school garden is the connecting link between the school and the real world.

NEW BRUNSWICK

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION

THE school garden is an outdoor work-shop or laboratory to be made use of by the teacher in the process of general education of the pupils. In its construction and care are affiliated physical activity, mental development and aesthetic training. Through the senses the mind is constantly receiving impressions which must stimulate observation, thought, and judgment and which wisely guided lead to intelligent expression and application. The succession of seasons, the adaptation of supply to need, the influence of climate, the relation between labour and providence, the dependence of animal life upon plants, and of these latter upon soil conditions, among the most important of which is the presence of numberless, infinitesimal bacteria, all furnish problems most intricate and difficult, but adequate for mental culture. Moreover the concrete consideration of such topics affords opportunity for moral and spiritual development since the wisdom of the beneficent Creator is traced in every manifestation of nature illustrated in the garden and its environment. Talks by the teacher in the school room about nature may exert an influence for good upon the young, but actual participation with nature in the open air, where her laws are being exemplified, and her varying moods and phenomena are being observed, elevates all to be co-workers as it were with the Divine. Individual effort is directed, character is exalted and education is enriched by a fund of information obtained at first hand. Incidentally through such outdoor work also the school-room instruction is enlivened and enforced by illustrations pertinent because they appeal to conditions and actions with which the pupils are familiar.

The school garden may be made to occupy an important place in the teaching of the usual schoolroom subjects. The purpose and object of education is the production of good citizenship. It is by what we are, and how we do what we engage in, that we prove our position in the nation. Example and practice establish precept and theory.

The first element of success to secure in any school is interest. This must be obtained through the natural unfolding of the child's powers. Children are interested in life, living things, which appeal to them through their senses. Through an interest thus secured we may awaken in the child a realization of need to know how to solve arithmetical questions, to use language with clearness and accuracy, to properly spell words used, to be able to make correct drawings and to learn the geographical and historical features of his native place. The school garden furnishes the living objects which appeal to the child's interest. Through his contact with it many varieties of arithmetical problems arise, from those of the simplest fundamental nature to intricate questions of commercial transactions. How can one better learn the principles and application of measurements than by actually making the measurements of land in the open? What better way to acquire the principles of bookkeeping than by actually keeping a set of books that represent the work of a season in a school garden, or home plot?

No better incentive to learn to draw can be afforded than for the child to realize his need of preserving the impression made upon his mind by some object of nature. The object to be drawn must be something to him, or he will not

recognize the value of committing to paper his idea of it. If that drawing inadequately represents his idea, at once he appreciates his need to give more careful attention to his teacher's instruction. Later, his ability to picture the varieties of form represented in the school garden will attest to the quality of the instruction he has received.

The study of language must ever take up much time in the school. Ordinary methods of teaching are likely to lack interest because of being largely abstract. It is not the word or the arrangement of words that will attract the pupil's attention unless he realizes that his own effort falls short of conveying to others the thought in his mind. Oral should precede written expression. Impressions should be made on the mind before expression is attempted. Personal knowledge comes largely through observation and physical effort. We talk best, most naturally, about what we know, what we are interested in. Nature study exercises, through the school garden, supply the best avenues for personal knowledge through the child's observation. By using the child's language descriptive of what he is interested in, of what he knows, the teacher is able to demonstrate successfully the fundamental rules of composition and their application in his every day life. Illustrations taken from books may later serve to confirm decisions reached. It is, however, through the child's own language made use of as a basis for composition lessons that the best results can be achieved. Language is a medium for conveying our thought to others. When it is studied with that practical view in sight, the value of such study takes on a new significance.

The monotony of indoor school exercises which have to do with mental training alone, may be relieved through the school garden lessons and activities participated in

by both pupils and teacher. It is by the mingling of the active and the mental, by the outdoor and the indoor, that the best results are obtained at the least expenditure of time and nerve.

The school garden furnishes a link between the school and the home in that it makes use of the home occupations for an educative purpose. The school premises indicate the high water mark of educational appreciation in the district. The school is ground common to all. Whatever succeeds in uniting the people in a common effort to improve will be found most beneficial. If the school grounds are dilapidated and neglected the tone of the community may naturally be expected to be sluggish and downward in tendency. Many school grounds which, before a school garden was established, were unfenced are now neatly enclosed by woven wire. The school garden has contributed its part to making the grounds attractive and has thus demonstrated its value in the education of the community.

On Arbor Day, which usually comes in May, and on Empire Day, opportunities are afforded for all the residents of the community to contribute their part in improving the school property. The teachers with the pupils contribute their part. We cannot be loyal to the Empire unless we are first loyal to our own community. We need to faithfully express our loyalty by acts. The month of May is, in country districts, a very busy time for the people, but a half day spent in connection with their school, living with their children at the school, will yield a more bountiful harvest in developing a community life sentiment than any other crop that could be put in in the same amount of time on their lands at home. Our duty as citizens in the district is to make life happier, more attractive and more social for the children while they are still at school. The best country district is the one where the teacher unites

with the pupils and the parents in regular efforts from time to time to make a real centre of attraction and the school grounds a veritable local beauty spot. The school garden and nature study exercises in the open air are the complement of the indoor mental training. In reading, language, spelling, writing, arithmetic, history and geography they may by

correlation and interweaving give energy and purpose to school life. Thus interest will develop as the child passes along through the grades and thus, too, he may be encouraged to remain longer at school securing a broader, more cultural education and more practical withal, because it is being obtained in terms of his daily life and environment.

MANITOBA

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION

THE school garden furnishes the concrete material for the following:—

Arithmetic:—Number of plots in a certain area, allowing for walks; number of ounces of seed for each plot at a certain rate per acre; yield per acre based upon the number of pounds per plot.

Elementary Geometry:—Planning the plots in various sizes and shapes on paper and drawing to a scale.

Drawing and Colourwork:—Concrete specimens are readily obtainable at most seasons of the year.

Composition:—Excellent practice may be obtained in writing descriptions and keeping records.

Farm Bookkeeping:—Children may keep records of various expenditures and receipts in connection with their plots and hence learn the principles of keeping crop records, stock records, etc.

Literature:—Interesting supplementary reading may be obtained in bulletins, farm journals, etc.

Geography:—Maps of the gardens are made, of the school ground, the village, township, county and province. Study of the industries and products of our own locality increases the interest in the study of such for other countries.

Manual Training: The making of window-boxes, hot-beds, flats, pegs, markers, etc., greatly increases the interest in the use of the common tools.

Botany:—Abundant material may be had during the spring and autumn, and also during the winter, by gathering and preserving such as will be required.

General Nature Study:—Concrete specimens may be had for the study of plants, birds, insects, wild animals, etc., and all in their relation to agriculture.

Elementary Physics:—Valuable lessons may be learned in mechanics, heat, light, moisture, each in relation to the practical affairs of life.

BRITISH COLUMBIA

BY J. W. GIBSON, M.A., DIRECTOR, ELEMENTARY AGRICULTURAL EDUCATION

SOME one has called the school garden the out-of-doors laboratory of the school, by which we would understand that it is a place for doing experimental work, making observations and recording results. Gardening is to the boys and girls of public school age largely experimental, and this is one of the reasons why they are so much interested in it; moreover, the knowledge gained in this way, at first hand and as the result of the pupils' work and observation, seems to be so much more real to them than that which they gain from reading and class room interpretation which too often is the teacher's interpretation for the credulous pupils. But we would do well to keep in mind that it is not so much the facts acquired by the child, whether by his own discovery or from reading, that are important but rather the relationship of facts, that is, interpretation. This latter and more important process of interpretation is the result of reflection following on observation. The class room is the best place for the completion of garden lessons. The teacher directs the processes leading to such understanding by recalling the observations made by the different pupils in the class (oral language work for the pupils) and by good questioning stimulating reflection, thus leading the pupils to arrive at their own conclusions or else revealing to them the need of making further observation. These class room conversations or discussions (I hesitate to use the term "lessons" because of certain unhallowed memories which the term recalls), are or can be made as interesting to the class as were their previous observations in the garden. There is a lot of truth in the remark made by some one who

understood children and who also understood teaching, to the effect that "a child delights in the discovery of a new relationship as much as in the discovery of a new object." The class room then is the place where the "adjourned business meeting" is held, where the reports of "committees" of investigation are presented, accepted, amended in committee of the whole or rejected, conclusions arrived at and resolutions finally passed.

Then again the class room discussion of plans and possibilities helps to give the pupils a purpose and point of view which aids them "to get somewhere" in the work which they decide to undertake. It affords the introduction and perchance the invocation as it also pronounces the benediction on the part performed in the garden.

Space will not permit of even the briefest consideration of how other school subjects, such as reading, spelling, composition, nature study, geography, arithmetic, drawing and all the rest, can with great advantage be correlated with school gardening. The garden and experiences in it become the great centre of reality for the child. These various subjects merely result from the different types of reaction and expression of the child mind. Herein these formal subjects find a place and application. They are as the "tools" that the child has to learn to use in fashioning the "raw materials" which he daily and hourly acquires through experience or sense perception, and each would be useless without the other. The garden stands for child experience and the class room has stood too much for "subjects" and formal discipline. Let us bring them together.

TEACHING AGRICULTURE IN THE RURAL SCHOOLS OF QUEBEC

BY JEAN-CHARLES MAGNAN, B.S.A., DISTRICT REPRESENTATIVE

AS stated in the program of the Catholic schools of the province, "In rural schools the most important thing is to keep the thought of the pupils on Agricultural Subjects." The teachers must be made to understand the influence that may be exerted through object lessons, lectures, dictations, problems of arithmetic, etc. The ideas given in these lessons or exercises fix them-

For this purpose the official program of the Catholic schools of our province prescribes teaching of the elements of agriculture from the third to the eighth year, inclusively. This information which should be given as object lessons includes the following: "Practical information on domestic animals; poultry; useful animals for the farmers; fruit trees; forest trees; the chief fodder plants of the district; the chief



GROUP OF SCHOOL GARDENERS AT ST. CASIMIR, QUE.

selves in the minds of the pupil, they monopolize the greater part of his intelligence during the years of primary school. If agricultural subjects are often mentioned, an indelible impression will be made, and useful lessons may be taught without overloading the program of studies. Thus will be created, without any loss of time, this agricultural atmosphere so desirable in country schools.

industrial plants of the locality; some ornamental plants; farming implements; cereals, the chief cereals of the locality, sowing, care and harvesting; general information on agricultural machinery and on farm buildings." (Third and fourth years, elementary course.)

The general program of class work for the modern course (fifth and sixth years) and for the academic course (seventh and eighth years) is

the following: "Practical information on soils and soil treatment; manures and fertilizers; agricultural work; feeding, breeding and hygiene of domestic animals; agricultural machinery and farm buildings. Soil and sub-soil; drainage. Fertilizers: manures; commercial fertilizers. Ploughing, deep ploughing; various implements of tillage. Rotations: Feeding live stock; meat production; breeding and improvement of live stock; qualities of the various species of farm animals. Dairying industry: milk, butter, cheese. Poultry. Live stock hygiene. The enemies of the farmer; the friends of the farmer; beekeeping. Agricultural book-keeping; rural economy. Sowing of cereals; care of cereal crops; permanent meadows; artificial meadows. Vegetable garden; fruit garden; apple culture; arboriculture and horticulture. Hoed crops and fodder crops. Farm buildings; farmer's hygiene. Harvesting of cereals. Advantages of farming as an occupation."

The "Manuel d'Agriculture Illustré" of the Brothers of Christian Instruction is used as a text book, in addition to the object lessons. This manual, well illustrated, helps to give to the children a liking for the farm. It is used by a large number of teachers in the rural schools.

The scholars also keep an agricultural copy-book containing a summary of the lessons taught in the class. Some of our schools also have an agricultural museum, which is

made use of in teaching. So much for the class work in agriculture. And this class work, when skillfully conducted, leads quite naturally to the practice of agriculture, that is, to the school garden.

In school gardens the pupils do the work themselves. Not only do they help the teacher in caring for the garden, but some plots are reserved for them for which they are made entirely responsible.

Seeds, flowers, plants, and other roots are given to the pupils who sow them or plant them after preparing the soil according to the instructions issued by the Department. The school gardening work is thus a means of teaching pupils while affording at the same time a healthy pastime.

Conducted with intelligence, gardening work creates a liking for farm work. It has a happy influence on the mind and the health of the children and justifies agricultural class work in the eyes of the parents.

In order to maintain constant relation between school work and practical work, there is nothing so useful as "*A diary of my garden*," in which the pupil keeps a careful record of all the work he does, his impressions, his observations, the difficulties that he has met with, and the results which he has obtained. This relation, which is necessary for the rational teaching of agriculture in the rural schools, is also kept by writing exercises, dictations, problems, etc., bearing on agriculture.

PREPARATION AND MOUNTING OF WEEDS FOR CLASS AND REFERENCE WORK

BY FAITH FYLES, B.A., ASSISTANT BOTANIST, CENTRAL EXPERIMENTAL FARM

THERE is no more interesting study than that of the life history of weeds, if properly undertaken. There is nothing that will interest the student of nature

more than to watch the development of the weed from the seed.

Seeds should be secured in the autumn, cleaned and put in a cool dry place during the winter. If any

uncertainty arises as to the exact species, send a whole plant in to the Dominion Botanist, Central Experimental Farm, Ottawa, for identification.

Presuming then that you have on

wooden boxes in the class room for the continuation of work, when the supply of seedlings on the blotting paper has been exhausted. Small seeds should be covered with a very thin layer of soil, which should be



PLATE I. A. RAGWEED.
C. COW CRESS.

B. BLACK MEDICK IN POD.
D. MALLOW.

(Drawn by F. Fyles).

hand a good supply of living seed, you are ready to start work in the early spring, when your pupils having received a certain knowledge of botany and botanical terms during the winter, are keen to put it into practice. Scatter the seeds on a square of wet blotting paper on a saucer and cover with another saucer inverted. At the same time, or a few days later, some seeds of the same species may be sown in shallow

moderately moist. Drawings and notes should be made as to the swelling of the seed, the rupture of the seed coat, the first appearance of root, shoot, or hypocotyl; the development of root-hairs, the unfolding of the cotyledons and many other points of interest. Emphasis should be laid on the point that careful drawings of each stage of growth ought to be made by the pupils. Nothing will add more to



PLATE II. UPPER ROW—CINQUEFOIL.
LOWER ROW—RAGWEED.

(Photo by F. W. L. Sladen).

their interest or develop more quickly their power of observation than the effort to make the drawings tell the story. Specimens of the seedlings should be pressed when the cotyledons expand, when the bud appears in their axil, when the first true leaves unfold and at each important subsequent change. These later stages of development will be seen in the plants in the boxes, or better still in the school garden, if a small space can be spared for the study of noxious weeds.

FIELD WORK

If it is not permissible to grow weeds in the school garden, the more mature plants must be studied in the field. For field work a light portable press and vasculum are necessary. Fill the press with sheets of felt paper alternating with a double fold of rather heavy weight tissue paper or light weight unglazed wrapping paper. The advantage of the enfolding paper is, that all necessary data



PLATE III. AN UNSATISFACTORY METHOD OF MOUNTING WEEDS
(Photo by Dr. F. T. Shutt)

can be written on it, i.e., name, habitat, locality, date and collector's name. These, as well as the plant, will remain undisturbed when the wet felt papers are removed. The felt papers must be changed every day and in the case of succulent plants, as, for instance the sow-thistles, twice a day. This is *absolutely necessary* if you wish to have specimens with a good colour and free from mould. Dry the felt papers in the sun before using them again.



PLATE IV. A SATISFACTORY METHOD OF MOUNTING WEEDS
(Photo by Dr. F. T. Shutt)

Unknown plants should be numbered and a duplicate, similarly numbered put into the vasculum, where it will be kept fresh till its position and name can be determined with the help of a botanical key. The specimens must not be taken out of the press till thoroughly dry.

CHOICE OF SPECIMENS

As success in any line of work depends largely on its general appearance, care should be taken to choose normal, well proportioned,

average-sized plants, free from disease and insects. Place them in a natural position on the pressing paper and arrange the leaves, buds, flowers and seed-pods in different positions, in order that all important characters may be seen. If the roots are thick, cut them lengthwise and reverse one-half.

MOUNTING THE SPECIMENS

The old way of mounting botanical specimens for demonstration purposes was hardly satisfactory. Gumming the plants to sheets of paper or fastening them with little strips of gummed paper as in the illustration (Plate III) means a tedious loss of

time and patience, while the almost immediate result is a soiled, faded, dog-eared and broken object—a blot on the wall. Compare the method in the next illustration (Plate IV). Here is as complete a series of specimens as may be desired, showing the life history of the plant from seed to seed, protected from the atmosphere, unfingered and intact, safe from the destruction of dust and flies, easily and simply prepared. The weeds are put on the cotton batting, and held in place by the glass cover. Some two or three hundred of these cases have been prepared at the Central Farm for use in the Dominion Experimental Farms' exhibits throughout Canada.

(NOTE.—This subject will be continued in the May number of THE AGRICULTURAL GAZETTE in which officials in the several provinces will describe how they prepare and mount specimens of plants for study.—*Editor*)

Prince Edward County, Ontario, announces school fairs for the fall of 1915 in the townships of Ameliasburg, Hillier, Hallowell, Athol, Sophiasburg, North Marysburgh and South Marysburgh.

The Quebec Journal of Agriculture announces that the agricultural merit competition this year will take place in District No. 1, comprising the counties of Jacques Cartier, Hochelaga, Laval, Two Mountains, Soulanges, Vaudreuil and the parishes and townships of Argenteuil and Terrebonne counties which are not included in the Laurentides. Applications for forms on which entries can be made must be filed with the Minister of Agriculture, Quebec, on or before June 15th.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

THE WORK OF THE CANADIAN SEED GROWERS' ASSOCIATION WITH POTATO CROP

BY L. H. NEWMAN, B.S.A., SECRETARY, OTTAWA, ONT.

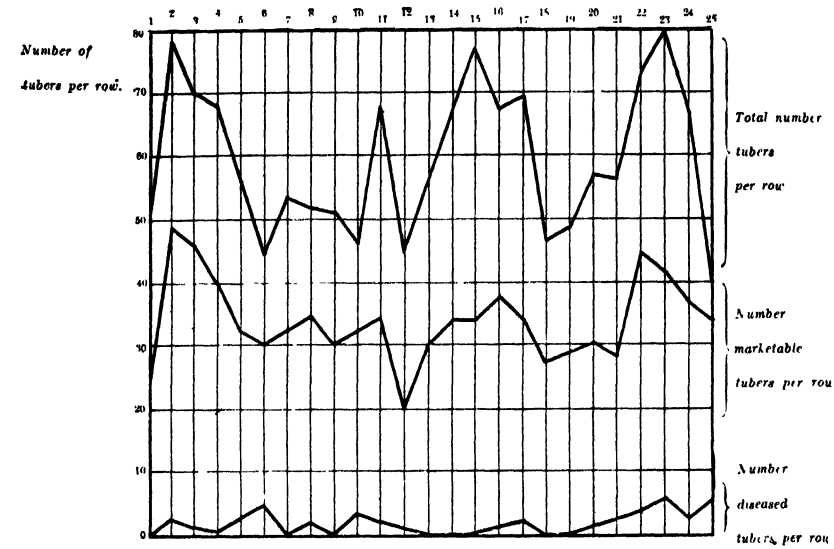
THE Canadian Seed Growers' Association was organized in 1904 with a view to encouraging individual farmers in the production and more general use of better seed of the different classes of farm crops. For the first few years the cereal crops received greatest attention, but more recently the potato has come to receive due consideration. The need for systematic work among individual growers, and the opportunity for making substantial gains with this crop is everywhere apparent. We have in Canada a great number of different varieties and strains of potatoes a condition which results in much confusion and uncertainty. In many districts there are to be found almost as many varieties as there are growers, the result of which is that sooner or later these varieties are almost sure to become more or less mixed. Perhaps a still more serious result of this condition is that buyers find it impossible to purchase any considerable quantity of potatoes of a uniform type at a given point. This is a very serious handicap to a potato growing locality, either where the potatoes are sold for eating or for seed. This condition obtains particularly in Ontario and parts of

Quebec. Realizing the need for some special effort in correcting this situation, and knowing that there are many farmers here and there throughout the country who are anxious and willing to do something if given some assistance, the Association devised a system by means of which a grower might systematically select his seed potatoes from year to year with a reasonable assurance of improving the type and being able to offer the trade a pure strain of a distinctive character. The system which has been adopted and which is now being practised by many growers throughout Canada is briefly as follows: The new beginner first decides upon the variety with which to work. Where there are a number of different varieties in the district, he is advised to compare in small plots at least two or three varieties which seem to be giving good results. We also urge him to include the variety which is most highly recommended by his nearest experimental station. In most cases it is likely that the latter variety will be the one chosen since it will have been recommended because of its ability to give good results over a comparatively wide area and is therefore likely to be most in demand

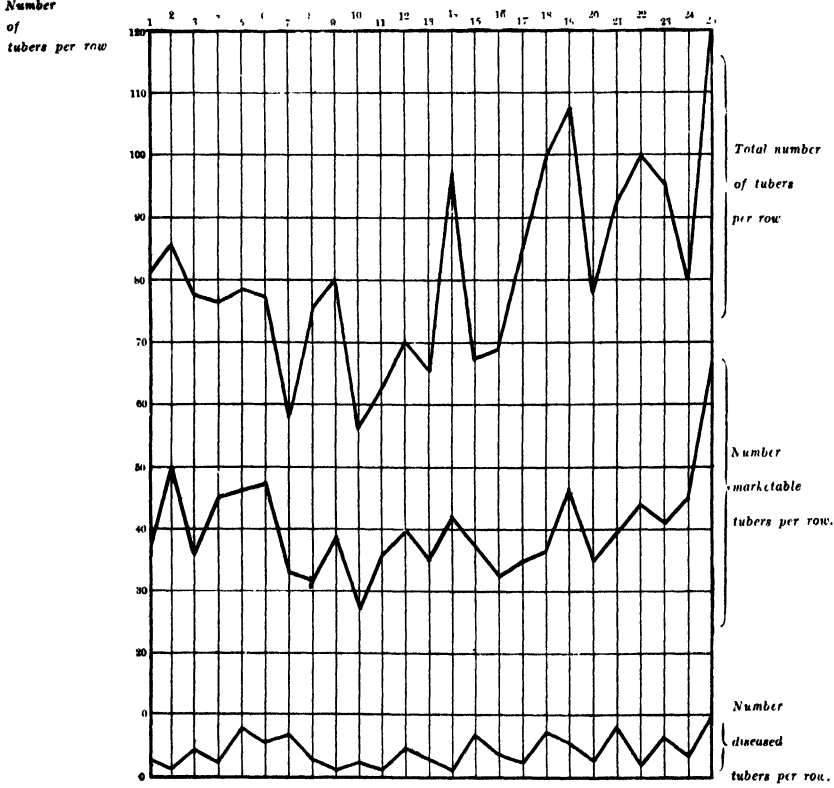
POTATO YIELDS.

DIAGRAMS SHOWING VARIATION IN YIELD OF INDIVIDUAL ROWS OF
POTATOES GROWN ON SPECIAL SEED PLOTS IN 1909:

CARMAN NO. 1—BY R. H. CROSSBY, MARKHAM, ONT.



EMPIRE STATE—BY R. H. CROSSBY, MARKHAM, ONT.

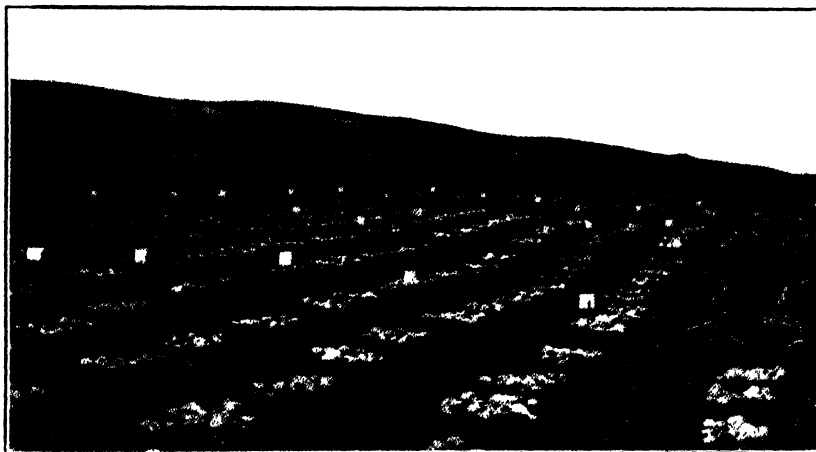


by the buying public. The choice of variety having been made, a quantity of the very best available seed of this variety is obtained to sow a special patch of land. Sometimes a grower obtains seed enough to plant all of the land he is devoting to potatoes. From the crop produced at least 25 or 30 of the best hills are selected and preserved for planting the following spring. During the first two or three years of his work, the grower is advised to keep the selected hills separate in paper sugar sacks or by means of some other convenient device, and plant these in separate rows or groups by themselves the following year. At dig-

careful work, or perhaps less where the grower starts with particularly good stock, the potatoes produced on this special patch may attain such a degree of purity and quality as to entitle them to be ranked as what the Association calls "Elite Stock Seed." This is the highest class of seed obtainable. The progeny of Elite Stock Seed up to and including three generations descended therefrom may be ranked as "Registered Seed." This is the class of seed which is offered for sale for seeding purposes.

SEED POTATO CENTRES

Owing to the fact that the type,



HAND-SELECTED SEED PLOT OF IRISH COBBLER POTATOES

ging time these different groups are kept by themselves in such a way that the grower may be able to select first the best groups, and then the best hills within each selected group. The accompanying illustration shows one of these seed plots which has just been dug by one of our growers.

After the first two or three years it is not quite so necessary to keep the selected hills separate, as these may be bulked together and planted on a special patch the following year. After two or three years'

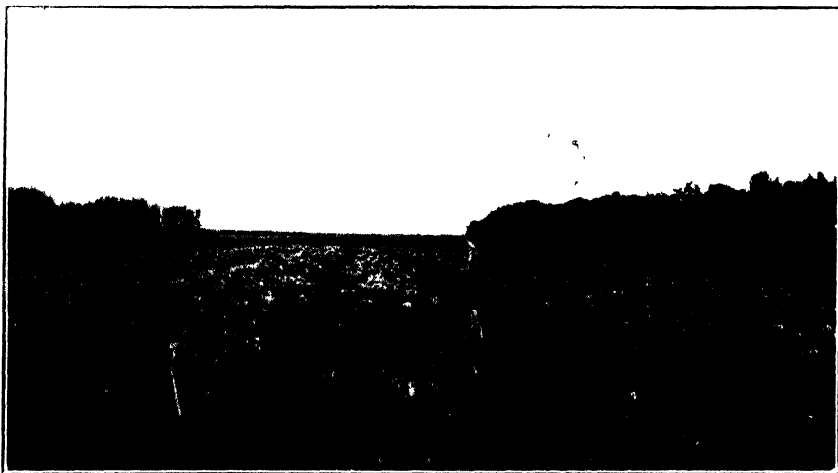
in the case of potatoes, may be changed considerably by continuous selection, the Association considers it an unsafe practice, where the production of considerable quantities of a uniform type in a given district is desired, to have more than one man in such district do selection work. In order therefore to facilitate the production of quantities of uniform high class seed potatoes, the Association seeks to encourage the organization of what is known as "Seed Potato Centres." These centres consist of groups of growers in dis-

tracts which are believed to be particularly suitable for the production of high class seed potatoes and who organize themselves into a definite body with responsible officers. Each centre chooses one of its number to produce first generation registered seed with which to supply the other growers and thus to obviate the necessity of each individual grower producing this class of seed himself. By obtaining a sack or two of first generation seed each spring and multiplying this for one year the members of a centre are able to have enough second generation seed to plant all of their potato land from

general product offered for sale may be vouched for, not only as regards its freedom from disease but as regards its productive capacity and trueness to type. Those who have to buy seed potatoes from year to year should find in these centres a reliable source of supply. The growers composing these groups should likewise find their work correspondingly remunerative.

INSPECTION OF SEED POTATOES

All seed potatoes grown for registration are inspected twice. The first inspection is made when the crop



A SEED POTATO PLOT PRODUCING "ELITE STOCK SEED"

year to year. The crop produced from this seed may be accepted for registration as third generation registered seed, providing it is up to standard as regards quality and freedom from disease. All seed complying with the standard set by the Association is advertised and handled by the centre as such rather than by the individual member thereof. This system, while quite new as applied to potatoes, bids fair to revolutionize the production of really first-class seed potatoes. By means of this system the purity of the stocks may be insured and the

is growing. At this time the purity of the variety, and the vigour and uniformity of growth, can be ascertained best. The second inspection considers the potatoes when they are dug, and takes into account the uniformity of type, quality, and freedom from disease. The inspection for disease is made under the supervision of the Dominion Botanist of the Dominion Experimental Farms. All potatoes which comply with the standards set by the Association regarding purity of type, uniformity, quality and freedom from disease are sealed in sacks or barrels

with metal seals bearing the name of the Association. This seal is placed over a tag which bears the certificate number and also the signatures of the inspectors as well as of the grower, so that buyers ob-

taining this seed may safely rely upon it. All registered seed potatoes, as well as seed of other crops, is given publicity in the seed catalogue issued by the Association, and distributed widely each spring.

POTATO GROWING CONTEST IN MANITOBA

THE following is taken from Bulletin No. 15, of the Manitoba Agricultural College, entitled "Manitoba Boys' and Girls' Clubs:

The contest in potato growing will be work with a well-known and desirable variety.

The potato originated in America and has grown to be one of the most important of food plants. The potato is eaten the world over more than any other crop except rice. It is grown very extensively now as a garden vegetable, as a truck crop, and in many sections of the country as a valuable field crop. Although the potato is adapted to a wide territory, certain varieties are best suited to particular climates and soils. Hence in selecting varieties special attention will be given to locality and soil texture.

RULES FOR POTATO GROWING CONTEST

1. Every member of each local branch of the Club will be supplied with ten pounds of a desirable variety of pure bred potatoes.

2. All potatoes must be planted and instructions must be followed as closely as possible.

3. Notes must be kept as outlined in paragraph on "note book," from which a composition of not more than two hundred words is to be prepared, giving the history of growing the crop. Credit will be given for this composition in placing the awards at the Fair.

4. From the note book each member must prepare a financial statement showing value of time expended in growing the crop.

5. In order that all competitors may have a uniform charge for labour, etc., the following schedule of rates is given and this members are expected to use:

1. Value of work for 1 horse, per hour	\$ 10
2. Value of work for two-horse team, per hour	20
3. Value of work of contestant, per hour	15
4. Value of each load of manure	1 00
5. Other expenses at actual cost.	

6. Each member must exhibit at the club fair, one bushel of selected potatoes from the crop grown.

7. The "marketable" must be separated from the "unmarketable" potatoes and each weighed, and weight of each recorded in the financial statement.

8. The following score card will be used in placing the awards:

	Points.
1. Value of basis of yield	35
2. Quality as shown by exhibit of one bushel	40
3. Written history of growing the crop (not more than 200 words)	15
4. Financial statement showing value of labour expended in growing the crop	10

INSTRUCTIONS FOR POTATO GROWING

Choosing the Plot.—A light, sandy, loam soil is generally the best for potatoes. Avoid a heavy, wet, or cold soil. The potato partakes to a great extent of the soil in which it grows. However, much can be done in preparation of soil and in cultivation to overcome some conditions which are not favourable. Do not select soil where potatoes were grown the previous year. This will avoid scab and other diseases left by last year's crop. It is advisable to plant in long rows so that a horse cultivator may be used.

Preparation of Soil.—Prepare the soil well to make a mellow and fertile seed-bed. Treat land with well-rotted barnyard manure; plough deeply and then harrow and disc it until a good deep, fine, mellow seed-bed, free from trash, is made. This will provide just what the potato needs for a good start, and a good finish too.

Selecting Seed Potatoes.—Plant only good, healthy, well-shaped potatoes. The slightly flattened, oval shape, shallow-eyed, form of potato is preferred. They should be free from scab or other diseased condition and should have a healthy appearance. Strong seed helps to make strong plants and strong plants are necessary to get good yields.

Cutting Seed Potatoes.—The best size piece cuttings is a question that has not

been definitely settled. When seed potatoes are very high in price it generally pays to make the smaller cuttings. Two good eyes to the seed piece, or good-sized potatoes cut into fourths, divided according to location of eyes, are the general rules under ordinary price conditions.

Planting.—Potatoes should be planted from three to four inches deep, according to soil and weather conditions. Usually it is advisable to plant potatoes between May 9th and 24th. If the plot is to be cultivated with a horse cultivator, the rows should be planted from three to three and one-half feet apart and of reasonable length. If in a rich garden plot and cultivation is to be done by hand, the rows may be planted closer and in hills in the row instead of in a continuous row as they would be if planted with a plough. In planting small samples it is advisable to plant with a hoe and press the soil down firmly with the hoe or the feet, while for field work the plough or potato planter is satisfactory. When in a continuous row a set should be dropped every twelve or fifteen inches. It is a slight advantage to place the set with the cut side down.

Cultivation.—The principal part of the cultivation should be done before the potatoes are planted. If the seed-bed has been properly prepared before planting, cultivation is then required only to keep the weeds out and the soil mellow and free from

crust on top. Harrowing until the potatoes come up will generally keep the weeds down, and the top soil mellow. The first cultivation may be quite deep if necessary to loosen the soil or to cover weeds, but, following this, care must be observed to prevent injury to the potato plant roots which spread from the rows. The frequency of cultivation depends largely upon the season. When the ground dries off after a rain and leaves a crust, the soil should be stirred as soon as it can be worked well. Weeds should be destroyed whenever they appear.

Spraying.—Watch for the potato beetle or "bug," as we sometimes call him. Do not let him get the start of you. Fight him with Paris green. It pays to spray potatoes. Do not wait until the potato beetles have large families to feed on your plants. Meet them early and as often as necessary to keep your potatoes free from the effects of their greedy appetites and from later visits of their extensive families.

Harvesting.—Wait until your potatoes are fully ripe. Harvest any time before frosty weather and when the soil is dry enough to handle well. Separate the "marketable" from the "unmarketable" potatoes, and find the exact weight of each. Store potatoes in a cool, dry place, and be prepared to exhibit one bushel at the Fall Club fair.

PRODUCTION OF POTATOES

From Agricultural War Book.

Countries.	1914 Bushels.	1913 Bushels.	1912 Bushels.
Great Britain and Ireland	272,516,000	283,913,000	213,783,000
France		477,115,000	552,074,000
Russia-in-Europe		1,274,452,000	1,356,824,000
Russia-in-Asia		32,622,000	58,564,000
Belgium		117,614,000	100,000,000
Serbia			2,154,000
Germany	1,680,000,000 (a)	1,988,611,000	1,844,863,000
Austria		424,498,000	
Hungary		179,135,000	686,307,000
Italy	62,464,000	65,742,000	56,313,000
Denmark	28,551,000	39,306,000	28,889,000
Holland		91,958,000	121,878,000
Norway		25,876,000	29,825,000
Sweden	57,642,000	75,368,000	65,765,000
Canada	85,672,000	78,544,000	84,885,000
United States	450,921,000	331,525,000	420,647,000
Totals for 7 countries reported in 1914	2,637,766,000	2,863,009,000	2,715,145,000

(a) From Broomhall's Corn Trade News.

NOTE—The production of potatoes in 7 countries in 1914 was 225,243,000 bushels less than in the same countries in 1913 and 77,379,000 bushels less than in 1912.

CULTIVATION OF VACANT LOTS

A PRACTICAL DEMONSTRATION FROM PHILADELPHIA.

PROBABLY no city in America has made such a practical success of the cultivation of vacant lots as Philadelphia. As a pioneer in the work the great Pennsylvanian City has had many imitators, including Boston, Buffalo, Detroit, Chicago, Rochester, N. Y., Worcester, Mass., all of which have had a measure of success and all of which have rendered a large amount of service to poor people. This is the nineteenth year of the operation of the system in Philadelphia. It is managed by a number of philanthropists under the title of the Vacant Lots' Cultivation Association with the assist-

education and recreation for thousands of men, women and children.

"Each one dollar makes four dollars and more on vacant lot gardens" is the inscription on the cover of the eighteenth annual report, which, under the title, "Our Method", says:

"We prepare the idle land, which is loaned to us, for cultivation by ploughing, harrowing, etc., then divide it into gardens about one-sixth of an acre in size and assign them to the families whose applications have been received.

"Fertilizer and sufficient good seed to



A BACK YARD GARDEN IN EARLY SPRING

ance of a superintendent and assistant superintendent, who alone receive remuneration. The work is mainly carried on by public subscriptions, which in 1914 amounted to \$7,193, backed by the goodwill of the civic officials and the citizens generally. In this way the association has kept moving, although to-day it stands in debt \$2,000, which is a little more than an average loss per year of a trifle above \$100. Some twenty-five citizens loaned land last year, on which 603 gardens were created that produced thirty-two thousand dollars worth of crops besides providing better living for hundreds of families and increased health,

insure a successful start are furnished to the gardeners. Improved methods of gardening are shown.

"We charge the families nothing for the opportunity to cultivate these gardens, as the idle land is loaned to us without cost. The ploughing, fertilizer, seeds, etc., which we furnish to the families cost the association about \$50 per garden. For these we charge \$1 the first season, \$2 the second season and so on, so that such families who continue to cultivate the garden the fifth season pay about the full cost of that which the Association furnishes to them.

"The families spread the fertilizer, plant the seeds, cultivate the growing crops and gather the matured produce. After supplying their family needs, they sell any surplus that remains.

"While acquiring health and happiness, and receiving valuable training and experience, the men, women and children join in increasing their material supplies. As their own work produces the results, they are not pauperized but encouraged to be more industrious and self-dependent, and acquire greater ability and self-respect."

there were five who gave a hundred dollars apiece, two five hundred each, and one, the president of the association, Samuel S. Fels, \$1,000. They are all well repaid for their generosity by the fact that many otherwise almost impoverished families, add from 25 to 50 per cent to their scanty wages. A significant remark in one of the annual reports is, "Our work has been of great service to tubercular persons."

"The work", says another report, "has an important sociological value, since it has clearly pointed out a practical solution of the vexed problem of what shall be done



A BACK YARD GARDEN IN AUGUST

In the reports many interesting incidents are quoted illustrative of the work. A man of 82, for instance, won the first prize at the Vacant Lot Garden Exhibition at a Farmers' picnic; twelve gardens were cultivated by widows and a like number by cripples and men around four-score years of age. Of the 600 families thus assisted last year, 447 were of the labouring class or short time workers, while others had ill-health to contend with. The subscribers numbered nearly five hundred, the majority donating from \$1 to \$25, although

with the congested masses in the slums of our cities. The successful cultivation of vacant city lots has demonstrated that 'back to the farm' is no meaningless cry; that mother earth is ever ready to give to those who trust her a bountiful supply of food; that the cultivation of the soil gives not only sustenance for the body but bounding health, freedom of action and clearer vision. Every step taken to induce a man to remain on the farm, or to return to the farm is a distinct contribution to the welfare of our country."

No better work can be done this year by any Board of Trade than that of assisting and fostering the food producing industries surrounding their town or city. They will be doing work profitable to themselves and to their country and the year 1915 should see the greatest production in the history of the Province.—*Honorary President Young in the Board of Trade News, Toronto, for March.*

MILKING REGULATIONS

THE following are the Rules for Milkers" or "Milking Regulations" as displayed in the dairy stables of Government and Agricultural Educational Institutions:

AGRICULTURAL COLLEGE, TRURO

Professor John M. Trueman writes to THE GAZETTE: -

"We have no rules for the guidance of milkers posted in the college stable. Our regulations require the men to wear white suits, use a small top milking pail, wipe the cow's udder with a damp cloth, and milk with dry hands."

SCHOOL OF AGRICULTURE OF STE. ANNE DE LA POCATIÈRE

1. Treat the cows with the utmost kindness. Never shout or speak roughly.
2. Clean the cows, at least fifteen minutes before milking.
3. Clean the udder and the flank of the cow before milking.
4. Have your hands very clean.
5. Milk rapidly and completely.
6. Milk with dry hands.
7. Keep silent while milking.

OKA AGRICULTURAL INSTITUTE

1. Keep the stable always clean.
2. Avoid distributing dry fodder to the cattle or straw bedding while milking is in progress.
3. When milking is done outdoors, keep at a good distance from manure piles and infected places.
4. Wash your hands carefully and keep them absolutely clean.
5. Tie the cow's tail to her leg.
6. Wash the udder with lukewarm water and boracic acid.
7. Pass the sponge under the belly and the fluke of the cow to gather loose hair and dust.
8. Wipe the udder with a clean cloth.
9. Milk in absolutely clean pails.
10. Use tin pails with a cover or a narrow opening.
11. Throw out the first four or five streams of milk.
12. Milk diagonally or crosswise.
13. Avoid anything that might disturb the cows. Keep them as quiet as possible.

14. Never strike or ill-treat your cows; kind treatment must always be the rule for dairy cows.

15. Milk with the full hand, and with dry hands.

16. Strip the udder completely.

17. Milk quickly; slow milking reduces the quantity of milk secreted.

18. Do not let the stable become cold when milking is being done; cold induces the cows to keep their milk.

19. Strain the milk as soon as it is milked, by passing it through a double cheese cloth.

20. In summer, cool the milk without aeration at about 50° F., and at a sufficient distance from the stables.

21. Milk at regular hours and at regular intervals. Any change in the time of milking always reduces the yield.

22. Always milk the same cows, and always in the same order.

23. Always wear a clean suit of clothes.

MACDONALD COLLEGE

1. Cows, if outside, must be tied in quietly, and with as little confusion as possible.

2. All manure must be scraped into gutters, care being taken to cause little disturbance of litter and dust in stable.

3. Milkers must wash their hands and face, comb their hair and put on milk suits.

4. Cans must be placed in dairy, strainers adjusted, separator set up, etc.

5. Each milker must provide himself with a wash cloth, and wash his hands and cloth in luke warm water after each milking. Cow's flanks, udders, teats, tails, etc., must be brushed off carefully, and then the teats and udder wiped with a damp cloth, *not washed*.

6. Each milker must be careful to do everything with the utmost cleanliness, keep his suit in as good condition as possible, avoid handling any part of the cow after washing except her udder and teats, and to keep his pail in good condition.

7. Milking must be done rapidly and quietly, no noise such as yelling, whistling or talking will be tolerated in the stable.

8. Each milking must be weighed separately and recorded for the particular cow, then emptied into the receiving can in the dairy.

9. Each milker must watch for abnormal milk, such as bloody milk, swelled quarter, or any other such trouble and report at once to the man in charge.

10. In so far as is possible each man must milk the same cows, each time, and at the same hour, night and morning.

11. After all cows have been milked, the cows, if turned out, must be treated in the same way as when put in. The stable must be cleaned at once, and put in perfect condition.

12. Milk must be attended to as directed.

THE DOMINION EXPERIMENTAL FARMS

COW BARN GENERAL RULES

1. NO SMOKING IN BARNS: Visitors persisting in smoking in barns after request not to do so, shall be turned out of buildings. Employees breaking this rule shall be dismissed at once.

2. EVERY MAN TO BE ON TIME:

3. Men to obey orders promptly and follow rules exactly: any neglect or difficulties in these matters to be reported to the Animal Husbandman at once.

4. Stables to be cleaned twice a day: 7.30 in the morning; 2.30 in the afternoon.

5. Calf pens and box stalls to be cleaned every second day.

6. Windows, walls, etc., to be kept clean.

7. Iron work and wooden fixtures to be dusted or wiped with damp cloths once a week or more frequently, if necessary.

8. Manure to be wheeled to centre of yard. Any manure scattered along track to be gathered up and placed on the main pile.

9. Barrows, forks and shovels to be kept clean and in place.

10. Shovels to be used for distributing feed truck to manger.

11. Trucks and all other implements to be handled carefully and kept in good running order.

TIME TABLE

1. Hours of Work:

Begin work: 5.30 a.m.
Breakfast: 8.00 to 8.30.
Dinner: 12.00 to 1.00.
Stop Work: 5.30 to 5.45.

2. Time Table:

5.30 A.M. Preparation.
5.45 " Milking.
7.30 " Feeding and cleaning barn.
8.00 " Breakfast.
8.30 " Finish feeding-bedding.
9.00 " Sweeping and cleaning.
9.45 " Grooming and washing cows.
11.15 " Preparing feed.
12.00 " Noon Lunch.
1.00 P.M. Preparing. Feed—Odd jobs.
2.30 " Feeding and cleaning barn.
3.30 " Milking.
5.00 " Feeding and Sweeping.

MILKING RULES

In milking the following rules must be observed:

(a) Cows to be bedded down, at least 30 minutes before milking.

(b) Cows to be brushed, at least 20 minutes before milking.

(c) Udders and flanks to be brushed off with clean damp cloth, just before milking.

(d) Milker to wear jacket and apron. These must be kept clean. Change three or more times per week, if necessary.

(e) Sleeves to be rolled up clear of wrist while milking, but shirt not to be exposed.

(f) Hands and face to be washed before beginning to milk.

(g) Towels must be kept clean and changed each day.

(h) Hands to be washed after milking each cow.

(i) No milk to be used on hands while milking. Vaseline may be used if desired.

(j) No unnecessary talking while milking.

(k) No tobacco chewing while milking.

(l) Cows to be treated kindly.

(m) Cows to be milked quickly, gently and thoroughly that is, clean out.

(n) Herdsman will direct men as to what cows they are to milk.

(o) Carelessness in brushing, wiping or milking shall be reported to the Animal Husbandman at once.

FINANCIAL ASSISTANCE TO AGRICULTURE

THE Jewish Agricultural and Industrial Aid Society, with headquarters in New York City, made in 1914, 327 loans to farmers amounting in all to \$170,811.92. During the year they received in the way of repayments from

farmers a total of \$124,786.37. Of this amount \$93,022.05 was principal and \$31,764.32 interest. In fifteen years this society has granted a total of 3,318 loans to farmers aggregating \$1,910,227.68. These loans were made to 2,876 farmers

occupying 2,387 individual farms in thirty-four states and the Dominion of Canada.

This society in 1914 placed 934 men in positions as farm labourers. The total cost of conducting the Farm Labour Bureau of the society for the year was \$1,243.71. The society issues a monthly magazine called the "Jewish Farmer" which is printed in the English and Hebrew languages.

The society organized an educational staff which delivers lectures on agricultural subjects in various farming communities, at farmers' institutes and farmers' demonstration meetings and pays personal visits to individual farmers. The society also grants free scholarships to children of poor farmers to enable them to pursue the

short courses of agriculture offered by the Agricultural Colleges of their respective states. One hundred and seventeen of these scholarships have been provided at an average cost of \$92.29 per scholarship. With few exceptions, those who have taken scholarships are said to be working on the home farms. The association encourages organization and co-operation among its members. Beginning in 1909, with nineteen associations, it had, at the end of 1914, sixty-three with a total membership of 1178. These are organized solely for agricultural purposes. The federation of societies includes the Co-operative Purchasing Bureau, Credit Unions, Co-operative Fire Insurance, Co-operative Creameries and other Co-operative enterprises.

CO-OPERATIVE EXPERIMENTS IN WEED ERADICATION

DURING the past three years, 1912-13-14, the Ontario Agricultural and Experimental Union, under the direction of J. E. Howitt, M. S. A., Professor of Botany at the Ontario Agricultural College, carried on co-operative experiments in the eradication of weeds. Some forty-five farmers co-operated in this work. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion, Wild Mustard and Ox-eye Daisy. Some very interesting and valuable results were obtained. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with, and demonstrated to their own satisfaction the effectiveness of the method tried, and at the same time their results furnished practical information to others.

These co-operative weed experiments will be continued this year (1915). The weeds to be experimented with are Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard and Ox-eye Daisy.

LIST OF EXPERIMENTS IN WEED ERADICATION

1. The use of rape in the destruction of Perennial Sow Thistle.
2. A system of intensive cropping and cultivation, using winter rye followed by turnips, rape or buckwheat, for eradicating Perennial Sow Thistle.
3. The use of rape in the destruction of Twitch Grass.
4. Method for the eradication of Bladder Campion or Cow Bell.

5. Spraying with iron sulphate to destroy mustard in cereal crops.

6. A method of cultivation for the destruction of Ox-eye Daisy.

SOME OF THE PRACTICAL INFORMATION GAINED FROM THESE CO-OPERATIVE WEED EXPERIMENTS

1. That good cultivation, followed by rape sown in drills, provides a means of eradicating both Perennial Sow Thistle and Twitch Grass.

2. That rape is a more satisfactory crop to use in the destruction of Twitch Grass than buckwheat.

3. That rape gives much better results in the eradication of Twitch Grass and Perennial Sow Thistle when sown in drills and cultivated than it does when sown broadcast.

4. That thorough deep cultivation in fall and spring followed by a well cared for hoed crop will destroy Bladder Campion.

5. That mustard may be prevented from seeding in oats, wheat and barley by spraying with a twenty per cent solution of iron sulphate without any serious injury to the standing crop or to the fresh seedings of clover.

REGARDING EXPERIMENTS

The object of these experiments is to gather data from which definite statements may be made regarding the best methods of controlling the various bad weeds. It is hoped to include more weeds each year until exact information has been obtained about the eradication of most of the bad weeds of Ontario.

CLASSES FOR THE STUDY OF BIRDS

THE National Association of Audubon Societies, with headquarters at 1974 Broadway, New York City, offers assistance to those teachers and others who are interested in giving instruction to children on the subject of birds and their usefulness. The offer involves, among other things, the forming of Junior Audubon Classes. Last year the pupils engaged in these classes numbered more than 115,000 and represented every State in the Union and several provinces in Canada.

The Association or State Society will then forward to the teachers for each member whose fee has been paid, a beautiful Audubon button, and a set of ten coloured picture of birds, the list of which is changed every year; and with them will go outline drawings, suitable for colouring by the children, and descriptive leaflets. The teacher reporting the class will also receive free of cost, for one year, the finely illustrated magazine *Bird-Lore*, which contains many valuable suggestions for teachers. Should the class then, or subsequently, be enlarged, a button and a set of leaflets will be added for each new member until the end of the school year. In return, it is expected that the teacher shall give at least one lesson a month on the subject of birds, and that the leaflets shall serve as a basis for the lessons, but experience shows that usually much more than this is done.

Full information as to the details of this plan, and a simple form of organization for a class, may be had by addressing

a request to the National Association. The list of ten birds to be studied this year includes the brown thrasher, nut-hatch, bluebird, downy woodpecker, Baltimore oriole, robin, bobolink, goldfinch, song sparrow and green heron.

BY-LAWS FOR AUDUBON CLASS

If the teacher wishes, the Audubon class may have a regular organization, and a pupil may preside upon the occasions when the class is discussing a lesson. For this purpose the following simple set of by-laws is suggested:

ARTICLE I. This organization shall be known as the Junior Audubon class.

ARTICLE II. The objects of its members shall be to learn all they can about the wild birds, and to try to save any from being wantonly killed.

ARTICLE III. The officers shall consist of a President, Secretary and Treasurer

ARTICLE IV. The annual fees of the class shall consist of 10 cents for each member; and the money shall be sent to the National Association of Audubon societies in exchange for educational leaflets and Audubon buttons.

ARTICLE V. The Junior Audubon class shall have at least one meeting every month.

Although most of these classes have been and will be formed among pupils in schools, any one may form a class of children anywhere, and receive the privileges offered.

CO-OPERATIVE WOOL MARKETING IN SASKATCHEWAN

IN the past wool production in Saskatchewan has not brought in as large returns as it should. This is partially due to the lack of proper care in preparing the fleeces for market; and also to the fact that usually the wool was sold in small quantities and had to be shipped long distances in less than car lots. To overcome these defects in our wool marketing system, the Provincial Department of Agriculture, through the Co-operative Organization branch, last spring undertook, without charge, to market the clip for sheep men who would prepare their wool in accordance with directions drawn up by the department. Some 180 sheep owners took advantage of this offer, a total of 69,404 pounds of wool was assembled in a warehouse in Regina, and sold in car lots to a firm of American wool dealers, an average price of 16.47 cents being paid to

the producers after defraying all cost for freight to Regina, cost of sacks, twine, and other incidental expenses. Considering that prices received in former years ranged from 10 cents to 13 cents per pound, the results were most satisfactory.

To further stimulate the sheep raising industry in the province the department again intends carrying on this work. This season, in addition to operating a receiving and grading warehouse in Regina, arrangements are being made to accept delivery of car-load lots of wool at any local shipping point in the province. This arrangement should add materially to the value of the undertaking as there are many points where three or four breeders could combine to make up a car lot, thereby increasing prices by reducing freight charges.

HOME ECONOMICS IN MANITOBA

IN the last report of the Department of Agriculture of Manitoba, Mrs. C. Charlton Salisbury, furnishes a most encouraging account of the work of the Home Economics societies in Manitoba. Nine new societies and several hundred new members were added last year, bringing the membership up to 1,675. Much useful work has been done in placing unemployed girls, in introducing social improvements, in the creation and care of beauty spots in localities, and above all in making articles of comfort for the refugee and the wounded. The societies in fact have been very generally employed in Red Cross work.

The Provincial Department of Agriculture helps along by a grant of 50 cents for each member up to twenty in number and 25 cents for every additional member. The Department last year also contributed 240 books to the travelling libraries of the societies. Four of these libraries exist, each of which contains from twelve to fifteen books on Home Economics, which are kept in constant circulation between the different societies. Finally, Mrs. Salisbury says that progress is being made not only in educational work but in everything looking to the improvement of home and community conditions.

AGRICULTURE IN RURAL SCHOOLS

THE Better Farming committee of the Canadian Credit Men's Association, after listening to an address by Mayor Waugh of Winnipeg on "Farming First", adopted the following resolutions approving of the steps now being taken by the governments of the three prairie provinces to introduce a course of practical agriculture in rural schools.

TRAINING IN RURAL SCHOOLS

"Resolved, that this association, recognizing the development of agricultural efficiency is being furthered in other countries by the inclusion of an agricultural course in their school systems, heartily approves of the steps now being taken by the governments of the three prairie provinces, to introduce a course of practical agricultural instruction in our rural schools, and urge that no time be lost in carrying this policy to completion."

FARM KNOWLEDGE FOR THE CITY BOY.

"Also resolved, that as in the opinion of this association, it is desirable to encourage

an interest in agriculture on the part of children dwelling in cities, and to develop latent agricultural talent wherever it exists among city boys and girls, the Minister of Education for Manitoba and the Winnipeg Public School Board be requested to consider the advisability of establishing one or more primary schools adjacent to the city for the purpose of providing a practical course in agriculture."

TO MAKE AGRICULTURAL COLLEGE MORE ACCESSIBLE

"Further resolved, that with a view to facilitate any tendency on the part of the city boys to take up the pursuit of farming, the Departments of Agriculture for each of the Central Western provinces be urged to modify the regulation of the Agricultural College so as to allow boys residing in cities or towns to be entered as students after having been engaged in farm employment for a period of six consecutive months, their continuance at the college for a second year to be conditional, if thought necessary, on their spending a further six months on a farm."

COUNTY AGENT EARNS \$410,000

SCOTT county, Iowa, has had a county agent for two years. In those two years this county estimates that the net cash value of crops increased, animals saved and profits from silos built, is \$410,500.

When Scott county decided that it was ripe for a county agent, a Davenport

banker was persuaded to become president of the county organization, known as the Farm Improvement league. He has served as its leader for two years, and has given much time to the work.

Two years ago there were 146 acres of alfalfa in the county; now there are 1,086. The increased cash value was figured on

actual production, and the figures are for the value of the crop above timothy and clover.

The increase in corn is computed from the records of early gathering and testing of seed. Scott county farmers were well in the lead on proper selection and testing of seed corn before organized work began, but seed selection has greatly increased. In 1912, 43,000 acres were planted with such seed. This increased to 60,000 acres in 1913 and 56,000 acres were planted in 1914. State authorities estimate five bushels per acre as the increased yield from such planting, but wishing to be conservative, the figures in this table are based on an increase of only two bushels per acre, valued at 50c per bushel.

The gain in oats is the result of the campaigns for the treatment of seed for smut, and the increased yields are taken from careful returns received. In 1912 but 1,100 acres of oats were sown with treated seed; while in 1913, it had increased to 4,400 acres, and in 1914 it was 11,220 acres. The figures on silos are based on an estimated profit of \$200 per silo.

The league conducted experiments in serum treatment for hog-cholera, which demonstrated its efficacy. As a result, 17,420 hogs were treated in 1913, of which 14,284 (or 82 per cent.) were saved. In

1914, 18,611 hogs were treated, of which 16,377 (or 88 per cent.) were saved. The value of the hogs saved is placed at \$10 per head, surely a conservative estimate.

"If to this splendid total of over \$400,000 we could compute and add the direct cash value of other activities of this organized work, the sum would be considerably larger," said President Dawson in an address to farmers. "We have no accurate data to show how much the farmers have profited by the work of urging the treatment of seed barley for smut, or of potatoes for scab; in the spraying of orchards, and the varied experiments conducted on the experimental farm."

Net cash value to Scott county, Iowa, of crops increased, animals saved and profits from silos built after the county agent came:

Kind of work:	1913	1914
Alfalfa	\$ 3,500	\$ 13,000
Corn	17,000	13,000
Oats	14,600	28,500
Silos	6,000	8,400
Hogs saved	142,800	163,700
Totals	\$183,900	\$226,600
Total for two years		\$410,500

From *The Banker-Farmer*.

COLLEGE EXTENSION WORK

The Extension Department of the West Virginia College of Agriculture announces the following results accom-

plished in five counties of that State in 1914 through the agency of County Agricultural Agents:

SOIL IMPROVEMENT DEMONSTRATIONS.

Drainage	(approx.)	539 acres tiled.
Lime	"	10,986 acres treated with lime.
Phosphorus	"	9,408 acres treated with ac. phosphate.
Manure	"	4,284 tons saved by extra care.
Legumes	"	2,205 acres to be turned under.
Other cover crops	"	6,163 acres to be turned under.

FIELD CROP DEMONSTRATIONS.

Corn	987 acres at average of 51 bu. against county average, 25 bu.
Potatoes	198 acres at average of 81 bu. against county average, 45 bu.
Orchard crops	53,100 trees given attention.
Alfalfa	697 acres harvested.
Alfalfa	1,070 acres seeded.
Cowpeas and soy beans	761 acres harvested for hay or seed.

LIVE STOCK DEMONSTRATIONS.

Silos	302 filled for first time.
Pastures	915 acres treated.
Pure bred sires	80 introduced.
Dairy cows	171 under test by scales and Babcock tester.
Cattle and cows	4,604 fed modified economical rations.
Poultry	187 poultry houses remodeled.

Of 1,404 well hogs treated with cholera serum—saved .96 per cent.
Of 946 sick hogs treated with cholera serum—saved .73 " "

SOCIETIES AND ASSOCIATIONS.

PRINCE EDWARD ISLAND POULTRY ASSOCIATION

At the annual meeting of the Prince Edward Island Poultry Association, March, 1915, the following officers were elected:

Honorary Presidents: His Hon. Lieut.-Governor Rogers; Hon. Murdock McKinnon, Commissioner of Agriculture. President, R. V. Longworth, Charlottetown; vice-president for Queen's county, Henry Laphorne; vice-president for Prince county, Vernon Matthew; vice-president, for King's county, Richard Murley. Directors: A. F. Houston, W. J. Cudmore, Arthur Nelson, Robert Haynes; superintendent, John Whitlock; secretary-treasurer, Geo. Lightizer, Charlottetown.

In a letter to THE AGRICULTURAL GAZETTE, Mr. George Lightizer, the Secretary, says:

"The Association has recently been taking a very special interest in the utility Department of Poultry, and it is hoped that this will encourage our farmers in the production of more and better poultry and eggs. The Federal Department of Agriculture has greatly assisted us in the matter of the expenses in connection with providing for competent judges, and our Provincial Department of Agriculture has rendered us valuable support in many ways, including the equipping of the Agricultural Hall, Charlottetown, with a large number of up-to-date coops for the accommodation of the exhibits.

"This valuable assistance given by the two Departments of Agriculture has, we think, been very instrumental in making the Association a real benefit to the poultry industry of this province.

A prominent feature in connection with the poultry industry of the province is the reformation of methods of marketing eggs, due to the organization of what are known as egg circles. This organization has made wonderful advances during a little less than two years, and there are at present upwards of 60 local Co-operative Egg Marketing Associations in the province, all of which are affiliated to a Central Association incorporated by an Act of the Provincial Legislature. This work which was initiated by a resident representative of the Federal Department of Agriculture, by whom the movement has been organized and is being perfected with further assistance being rendered by the Federal and-

Provincial Departments of Agriculture, bids fair to firmly establish good methods of marketing and to greatly increase production. Increased production is already noticeable in districts where egg circles are in operation.

NEW BRUNSWICK FARMERS' AND DAIRYMEN'S ASSOCIATION

At the thirty-ninth annual session of the New Brunswick Farmers' and Dairymen's Association held at Sussex, N.B., on March 8, 9, 10 and 11, the following among other resolutions were passed:

Confidence in agricultural policy of Dominion and Province.

Recommendation to Provincial Department of Agriculture to effect an organization in each county of the province that will more closely bind together the agricultural interests of the respective counties.

A recommendation to vice-presidents to get in touch with the various agricultural societies in their counties with a view to co-operate in influencing their respective municipal councils to put in force a tax on dogs, said tax to be a fund from which owners of sheep killed by dogs may be reimbursed for losses incurred through the ravages of dogs.

A recommendation to vice-presidents to make every effort to get the agricultural societies in their respective counties to co-operate in influencing their municipal councils to enforce the law prohibiting scrub bulls running at large in sections where efforts have been made, and are being made, to introduce pure bred cattle.

The officers for the ensuing year were appointed as follows; President, J. T. Prescott, Sussex; vice-president, A. F. Dickson, Chatham; correspondent-secretary, A. R. Wetmore, Clifton; recording-secretary, C. M. Shaw, Hartland; treasurer, H. H. Smith, Hoyt Station.

SASKATCHEWAN VETERINARY ASSOCIATION

At the annual meeting of the association held in Regina in March the following officers were appointed:

President: Dr. C. Head, Regina; vice-president: Dr. H. Richards, Indian Head; secretary-treasurer and registrar: Dr. R. G. Chasmar, Hanley; executive committee: Dr. M. P. McLellan, Regina; Dr. Norman Wright, Saskatoon; Dr. A. G. Hopkins, Bratton.

BRITISH COLUMBIA FRUIT GROWERS' ASSOCIATION

Following are two of the more important resolutions passed by the British Columbia Fruit Growers' Association at their latest annual meeting:

Whereas the great growth of the fruit industry both in Canada and the United States has caused it to be more difficult to get profitable markets; and whereas it has been pretty well proved and is generally agreed that the cutting of prices, in order to obtain sales by agents, dealers, and others, including growers themselves, has greatly lessened the amount of money that might have been received for the fruit; and whereas the getting together of those handling fruit at least in some way that will keep prices from being unnecessarily lowered, to the ruin of the grower and injury of the whole population, is necessary: Be it therefore *Resolved*, That all Fruit-growers' Associations, Farmers' Institutes, Boards of Trade, business-men, newspapers, and the Government of the Province be asked to help create such a public sentiment that will demand that fruit be not slaughtered by unseemly competition. And be it further *Resolved*, That the British Columbia Fruit-growers' Association appoint a committee to seek to solve this problem and to help to bring together the heads of the various selling agencies.

(1.) *Resolved*, That in the interests of the fruit-growers there should be some means of procuring loans at a cheaper rate and on better terms than is possible under present conditions.

(2.) Whereas the rates of interest and the difficulties of obtaining loans place a great burden on farmers and fruit-growers in seeking to improve their lands; and whereas great improvement has been made and general prosperity promoted in countries that have made large loans, properly guarded, at low rates of interest to settlers; and whereas the Agricultural Commission has recommended a similar undertaking for this Province: Be it therefore *Resolved*, That we unite with other agricultural bodies in asking the Government as speedily as possible to arrange for loans to settlers at a low rate of interest, for improvements to farms, purchase of stock, etc., and that the funds should be administered by an impartial non-political Commission.

JUNIOR FARMERS' IMPROVEMENT ASSOCIATION

A meeting of the members of the Five Weeks' Agricultural Course held in Brighton last year and of those who attended the six weeks' course at Warkworth this winter was held in the Agri-

cultural Office, Brighton, Northumberland County, Ont., Saturday, March 13th.

Deep interest was manifested in the new organization, for forming which the meeting was called. This is known as the Junior Farmers' Improvement Association of Northumberland, the object of which is to organize the young men of the farms into a consolidated working body, who in co-operation with the district representative will conduct field crops and feeding competitions conduct various experiments either of their own choosing or those suggested by the Agricultural Department or the Ontario Agricultural College, to be a medium for the distribution of farm literature and to improve general farm conditions in their own locality. R. S. Beckett, District Representative, opened the meeting with a brief address emphasizing the importance of such an organization, after which the following officers were elected: --

President, Oscar Laver, Norham; vice-president, Arthur Down, Hilton; secretary-treasurer, Maurice Herrington, Hilton; directors, Arthur Brown, Warkworth, Harvie Wilton, Castleton; Garnet Hardy, Morganston; Raymond McGillis, Brighton; Donald McConnel, Brighton.

Two meetings of the association will be held yearly. The organization is limited to the members of the Agricultural Short Courses in the county, but will enlarge rapidly from year to year as the students of succeeding classes are added. As the course is held in a different centre each year, it is only the matter of a few years before the county will be covered and the whole of Northumberland will be represented in this enterprising and promising association.

GOOD ROADS ASSOCIATION

At a business session of the Canadian Good Roads' Association, held recently in Toronto, Mr. B. Michaud, deputy minister of roads for the province of Quebec, was elected president for the ensuing year. The meeting place of the congress for next year was not chosen. Other officers elected were: Honorary presidents, Messrs. W. A. McLean and H. H. Dandurand; secretary-treasurer, G. A. McNamee, Montreal; educational committee, Messrs. W. A. McLean, O. Hezlewood, J. Duchastel, R. S. Henderson, P. J. Shore, Lieut.-Col. Ponton, J. A. Sanderson, W. Pillow and G. A. McNamee.

CATTLE BREEDERS' ASSOCIATION OF MANITOBA

The 12th annual sale of Pure Bred Bulls, held under the auspices of the Cattle Breeders' Association of Manitoba, on March 18th, in Brandon, was a decided success. The animals on the whole, were of fair quality, and brought in in respect-

able condition, many of them being in excellent shape. There was a notable absence of aged and thin animals. Entries were made by many of the prominent breeders of the province, as evidenced by the catalogue. The sale was conducted in the Brandon Winter Fair Building, T. Crawford Norris acting as auctioneer. The terms were cash, and every animal was settled for within an hour after the close of the sale, and shipped to the buyer's nearest station within 24 hours after the sale had closed. The averages made by the various breeds are as follows:—

		Average.
9 Angus Bulls	\$1,345	\$149 44
1 " Female	200	
2 Hereford Bulls	310	155 00
1 Holstein Bull	80	
43 Shorthorn Bulls	6,620	153 95
1 Shorthorn Female	75	
57	\$8,630	\$151 40

NORTH BATTLEFORD LIVE STOCK COMPANY

Continuing the reports of the organization and work of co-operative live stock associations commenced in the December number and continued in February, Commissioner F. Wright, of the North Battleford Board of Trade, sends particulars relating to the North Battleford Live Stock Company, Limited, a company founded by a former mayor of the town, who is still president. Mr. Wright defines the object of the company as: "To buy live stock on borrowed money and to sell to farmers on extended credit." In other words the company becomes surety for the farmer. The company, organized in 1913, is capitalized at \$25,000, three-fourths of which has been subscribed. The shares are \$10 each and purchasers of live stock from the company must each hold at least one share. A clause in the articles of incorporation prohibits the declaration of any dividend on the stock. Five per cent has been paid up, and the bank lends money on the total guaranteed subscriptions. At the meetings preliminary to organization, the founder, then Mayor Griese, F. W. Hodson, and others delivered addresses. Live Stock is sold on terms to suit the purchaser, who gives a mortgage covering the cost of the animals. He also gives a six months' note bearing interest at 8 per cent. If these notes cannot be met in whole at maturity the balance is renewed for another six months. If the purchaser needs it he can continue for a further six months, thus obtaining eighteen months in which to make repayment. When possible, arrangements are made with purchasers of milch cows to send cream to the North Battleford Creamery, for which credit is endorsed on the notes. Up to the end of March transactions covering \$14,000, had

been completed, including the buying of 90 dairy cattle in Eastern Ontario. A small percentage is added to the cost of each animal to cover incidental expenses and to create a reserve fund for protection against losses. The clerical work is done by officials of the Board of Trade and the City Treasurer looks after the collections, so that no salary is paid outside that of a man at intervals to superintend the care of the animals on arrival. Commissioner Wright says that the scheme is an undoubted success and has proved a stimulus to the live stock industry.

LIVE STOCK ASSOCIATIONS OF SASKATCHEWAN

The various Live Stock Associations of Saskatchewan held their annual meetings at Regina on March 9, 10, 11—1915. Numerous resolutions dealing with matters of prime importance to stock breeders in the Western Provinces, were thoroughly discussed and a large number of them carried; amongst these were: "The dog and coyote menace to the sheep industry", "Bovine tuberculosis", The establishment of the chilled meat industry in the West", "Co-operative marketing of wool and live stock" and "The running at large of entire animals". Resolutions were also passed commending the distribution of cattle and co-operative marketing of wool by the Department of Agriculture, and also recognizing the suitability of the Provincial gift of military horses to the Imperial Government.

At these meetings the nucleus of at least two new organizations was formed—these were—a Provincial Co-operative Live Stock Marketing Association, and a Clydesdale Club.

The following are the officers of the associations elected for 1915:

SHEEP BREEDERS' ASSOCIATION

President, A. B. Potter, Langbank; vice-president, E. E. Baynton, Maple Creek; secretary-treasurer, J. Cochrane Smith, Regina; directors, W. C. Sutherland, Saskatoon; J. L. Beattie, Piapot; J. Browne, Neudorf.

HORSE BREEDERS' ASSOCIATION

President, R. H. Taber, Condie; vice-president, H. Gilmour, Pasqua; secretary-treasurer, J. Cochrane Smith, Regina; directors, R. W. Hamill, Regina; R. Sinton, Regina; W. C. Sutherland, Saskatoon; Alex. Mutch, Lumsden.

Horse Breeders' Representative on Stallion Licensing Board.—W. H. Bryce, Arcola.

CLYDESDALE CLUB

After the meeting of the horse breeders, a meeting of Clydesdale breeders was held,

and it was decided to form a provincial Clydesdale club for the purpose of advancing the interests and qualities of this breed. The officers elected were:

President, R. H. Taber; vice-president, W. H. Bryce; secretary, D. T. Elderkin; directorate, H. Gilmour, W. C. Sutherland, Alex. Mutch.

SWINE BREEDERS' ASSOCIATION

Hon. President, F. T. Skinner, Indian Head; president, S. V. Tomecko, Lipton; vice-president, J. G. Robertson, Davidson; secretary-treasurer, J. Cochrane Smith, Regina; directors, C. G. Bulstrode, Qu'Appelle; A. B. Potter, Langbank; John Ames, Hanley.

CATTLE BREEDERS' ASSOCIATION

President, W. C. Sutherland; Saskatoon; vice-president, A. B. Potter, Langbank; directors: J. Barnett, Moose Jaw; J. Brandt, Edenwold; R. M. Douglas, Tantallon; secretary, J. C. Smith, Regina.

WINTER FAIR BOARD

The annual meeting of the Saskatchewan Winter Fair Board was held in Regina on March 11th, at which it was decided to hold the 1916 Fair either late in February or early in March.

It was further decided to widen the scope of the Winter Fair Board by combining it with the Provincial Live Stock Executive and a committee was appointed to draft

a charter and draw up proposed alterations in the constitution.

A resolution was passed asking the railroads for a combined tariff on stock and market poultry shipped in the same car.

The formation of a Provincial Co-operative Live Stock Marketing Association was endorsed. It is hoped to hold Winter Fairs at both Regina and Saskatoon in 1916, and committees of management were selected for both places.

The following officers were elected for the year.—

President, Robert Sinton, Regina; vice-president, W. C. Sutherland, Saskatoon; secretary-treasurer, J. C. Smith, Regina.

The directorate consists of the presidents and vice-presidents of the provincial live stock associations.

SALE OF PURE BRED CATTLE

At the annual auction sale of pure bred cattle held under the auspices of the Saskatchewan Cattle Breeders' Association, 64 animals were exposed for sale, of which 48 sold at an average price of \$131.00 per head.

The demand was not brisk and the fact that a number of the remaining animals changed hands after the sale on credit terms would indicate that the present financial stringency was partly responsible for this state of affairs.

Of the animals offered, 44 were Short-horns, 6 Aberdeen Angus, 6 Herefords, 5 Holsteins and 3 Ayrshires.

BOOK REVIEWS

The Principles of Fruit Growing, by L. H. Bailey. The MacMillan Company, New York and Toronto, 5¼ by 7½ inches, 432 pages, illustrated.

This is the twentieth edition of a work that first came out in 1897, but it has been so completely re-arranged, and so largely re-written that it is to a great extent a new book. It belongs to the Rural Science Series. In recent years much new knowledge has come to the aid of the fruit grower. This relates to tillage, insect and fungous control, protection from frost, fertilization, packing, marketing, etc. The present edition embodies the most advanced ideas on these and various other phases of the industry, all of which are presented in plain language, aided in many cases by illustrations. As an indication of the exhaustive character of the work, it may be mentioned that the index to the volume requires the space of more than nine pages.

Plant Breeding, by L. H. Bailey, Professor of Horticulture in Cornell University, Ithaca, N. Y.; The MacMillan Co., London, New York and Toronto; 5 x 7½ inches, 483 pages; price \$2.00.

This is the fourth edition of a work comprising six lectures upon "The Amelioration of Domestic Plants" by perhaps the best authority on horticulture in the United States. Mr. Bailey has written a great variety of books on plant life, but possibly none has attracted more attention and been more widely quoted than the present volume. To this edition has been added a valuable chapter on "Current Plant Breeding Practice." Professor Bailey is thorough in all he undertakes. In his preface he says very rightly "that one cannot understand the production of new varieties until he has grasped some of the fundamental principles of the onward progression of the vegetable kingdom. Any attempt, therefore, to explain the

origin of garden varieties, and the methods of producing them, must be at the same time a contribution to the literature of the philosophy of organic evolution." In that quotation a key to the work is supplied. The first lecture deals with "The Fact and Philosophy of Variation"; the second with "The Philosophy of the Crossing of Plants, considered in reference to their Improvement under Cultivation"; the third, with "How Domestic Varieties Originate"; the fourth with "Recent Opinions, being a Résumé of the Investigation of De Vries, Mendel and others, and a Statement of the Current Tendencies of American Plant-Breeding Practice"; the fifth with "Current Plant-Breeding Practice" and the sixth with "Pollination, or How to Cross Plants".

Agriculture, Theoretical and Practical, by J. Wrightson and J. C. Newsham; London, Crosby Lockwood & Son.

While this is a work written entirely from an English point of view, it contains in its six hundred odd pages much of most valuable matter to the peoples of all countries. Right Hon., the Earl of Northbrook, who in a brief introduction pays tribute to the abilities as agriculturists of the authors, who indeed in their multifarious connections appear to be well ahead of their fellows, both in practical experience and as instructors, aptly sums

up the scope of the volume when he says: "This book is eminently suggestive as to the best methods of applying science to practice. It lays stress upon many problems which are destined to produce far-reaching consequences on fertility, land cultivation and rural economy. The subjects treated are very numerous, and include not only cultivation, but such important matters as farm buildings, book-keeping and the relative merits of grass and arable land." The second title of the work is "A Textbook of Mixed Farming for Large and Small Farmers and for Agricultural Students." There are six parts, the first, divided into ten chapters, deals with Soils, Manures and Crops; the second, consisting of seven chapters, with Live Stock, Feeding and Economic Zoology; the third, of four chapters, with Buildings, Machinery, Implements and Accounts; the fourth, of three chapters, with Dairying; the fifth, of four chapters, with Horticulture, and the sixth, of three chapters, with Poultry, Rabbits and Bees. Numerous appropriate illustrations of bird, beast, plant life, insects and machinery lend great value to a book that at six shillings net in England must be accounted wonderfully cheap. Possibly it is in the live stock section, with its particular description of breeds of animals of all sorts, that the most value to Canadians will be found.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

EXPERIMENTAL FARMS SERIES

Lime in Agriculture. This is Bulletin No. 80 of the regular series of the Experimental Farms.

One of the principal functions of the chemical division of the Experimental Farms is to solve many of the problems that are connected with the maintaining and building up the fertility of the soil. Much work in this direction has already been accomplished. It has been ascertained by experiment that the part played by lime in maintaining and increasing fertility is an exceedingly great one. As to the quantities of lime-stone in the Dominion and for the information of farmers as to how and to what extent this may be used with advantage by farmers, a bulletin has been prepared by Dr. Frank T. Shutt, Dominion Chemist, dealing with this subject under the following heads:—

The nature of lime and lime-stone.

The agricultural functions of lime and its compounds.

Comparative value of lime compounds.

The appropriation of lime compounds.

The use and misuse of lime.

THE LIVE STOCK BRANCH

The Great Neglect in Sheep Husbandry is the title of Pamphlet No. 9 of the Sheep and Goat Division, for which T. Reg. Arkell and Norman Stansfield are responsible. It deals with castration and docking and points to the great necessity of these operations. Reasons are supplied and methods illustrated.

DIVISION OF HORTICULTURE

"The Home Vegetable Garden and a Patriotic Gardening Competition." Pamphlet No. 13, Experimental Farms Series, by W. T. Macoun, Dominion Horticulturist. This pamphlet is especially timely, coming at a period when the attention of dwellers in towns and cities is being directed to the use they could make of back-yards, waste land and vacant lots.

The Dominion Horticulturist gives advice as to the situation of the garden, preparation of the soil, planning, seeds to sow, methods of cultivation, vegetables and plants that can be grown and so on. He also supplies rules and regulations that could be adopted by municipalities, fair associations and other organizations for patriotic vegetable gardening competitions.

PROVINCIAL DEPARTMENTS OF AGRICULTURE

ONTARIO

Pure Bred Live Stock Census of Peel. This pamphlet, compiled by the Peel County Branch of the Ontario Department of Agriculture, gives information relative to the extent of the pure bred live stock industry in the county, and brings prominently before all interested parties the names of the breeders, together with the breeds, ages and number of animals in their possession. The information contained therein was obtained directly from breeders during the latter part of the year 1914, and in order to keep this information before the public it is intended that similar lists shall be tabulated and distributed annually.

Smuts and Rusts of Grain Crops. This is Bulletin No. 229 of the Ontario Department of Agriculture, prepared by J. E. Howitt, M. S. A., Professor of Botany at the Ontario Agricultural College, and R. E. Stone, B. Sc., Ph. D., Lecturer in Botany. It is estimated that the losses sustained from smut in Ontario grain crops amount to \$2,720,000 annually, but two-thirds of which occurs in oats, wheat being the next greatest sufferer. To cope with this danger this very practical bulletin goes fully into the cause and cure of smut and rusts and gives a number of ways of treating seed grain, in order to avoid or lessen injury to grain crops from these causes.

Farm Crops. Results of Experiments at the Ontario Agricultural College. This is Bulletin No. 228 of the Ontario Department of Agriculture, and prepared by Prof. C. A. Zavitz, Professor of Cereal Husbandry at the Ontario Agricultural College. It deals with experiments made in the raising of each of the regular field crops and of other important crops, chiefly for fodder not now well-known to many of the Ontario farmers. These tests were conducted at the Ontario Agricultural College farm under the direction of the author, who gives, in this bulletin, much valuable advice regarding the possible increase of farm produce, rotation of crops, etc. The author also urges that special attention be given to the raising of

field roots for seed in Ontario, as much of such seed up to the present time has been imported from European countries now at war. The following four very practical rules for producing satisfactory field crops are given:

1. Raise only such crops as are likely to meet the demand.
2. Select good, plump seed which has been tested for vitality.
3. Give the land early and thorough cultivation.
4. Sow all crops at the proper time and according to right methods.

MANITOBA.

Report of the Department of Agriculture and Immigration for the fiscal year ending November 30, 1914. This volume of 130 pages embodies a record of the accomplishments of the department in its several branches which are treated under the following headings: Agricultural College, Dairying, Horticulture, Noxious Weeds, Protection of Game, Live Stock Associations, Registration of Stallions, Immigration Agricultural Societies, College Extension Work, Home Economic Societies, etc. In his introductory letter to the Minister, the Deputy Minister refers to many successful measures introduced for the first time, much of which he states were made possible owing to the very liberal grant made to the province by the Federal Government in accordance with THE AGRICULTURAL INSTRUCTION ACT.

SASKATCHEWAN

Annual Report of the Saskatchewan Live Stock Associations. This pamphlet gives the annual report for 1914 of the Saskatchewan Horse Breeders' Association, Cattle Breeders' Association, Sheep Breeders' Association, Swine Breeders' Association, and includes the programme for the annual meetings held in March, 1915.

BRITISH COLUMBIA

Protection of Canadian Apples. This is a circular compiled for the British Columbia Fruit Growers' Association and sets forth the present situation of the fruit-growing industry of Canada and in particular that of British Columbia. The memorandum shows, under the following heads, some of the essential conditions affecting the success of Canada's apple industry: (1) Production in the United States; (2) Western Canada as a market for apples; (3) Influence of United States' apples in Canadian markets; (4) Canada's orchard industry; (5) The British Columbia Orchard Industry.

Fire-Blight, (Bacillus Amylovorus—Burrill), Circular No. 23 of the Horticultural Branch of the British Columbia Depart-

ment of Agriculture, prepared by W. H. Brittain, B.S.A., and B. Hoy, B.S.A. This circular discusses Fire-Blight under the following heads: Cause of Disease, Signs of Disease, How the Disease is Spread, Factors which Influence the Control of Blight, Winter Injury of Blight, Cultural Conditions, Summer Cutting, Distance to Cut, Cutting in the Dormant Season, Methods of Cutting in Winter, Corrosive Sublimate and Susceptibility of Varieties. The circular is also suitably illustrated.

Instruction to Secretaries. This is a circular issued by the Farmers' Institute Branch of the British Columbia Department of Agriculture, and gives instructions in connection with the rules and regulations governing farmers' institutes.

MISCELLANEOUS

A complete report of the *Potato Growing Contest for Boys in Carleton and Russell Counties* during the years 1913 and 1914 has recently been issued by the committee in charge, consisting of Mr. R. B. Whyte, Ottawa, Mr. L. H. Newman, B.S.A., Secretary Canadian Seed Growers' Association, Ottawa, Mr. W. D. Jackson, B.S.A., Agricultural Representative for Carleton County, Carp, Ont., and Mr. W. T. Macoun, Dominion Horticulturist, Ottawa.

This report includes the organization and rules of the contest, results of the contests in Carleton County in 1913 and 1914, and results of the Russell County contests in 1913 and 1914, with a complete report of the public meetings held in both years,

also a summary of the results obtained in these contests.

Lethbridge Board of Trade Annual Report, 1914. This report gives the population of Lethbridge as 10,147, and the school enrolment as 1,888. The Board has a membership of 219. The president is G. R. Marnoch. It is stated that the activities of the Board have been mainly applied to the furtherance of agriculture, and its allied industries. Considerable attention has been paid with gratifying success to irrigation. With a view to helping farmers to acquire suitable live stock, sixty citizens pledged themselves to the extent of \$150 each. The nine thousand dollars thus raised was loaned at five per cent to farmers, who with their notes also gave a lien on their cattle, repayment being spread over two years. Farmers, backed by the Board of Trade, have petitioned the Federal Government to extend its irrigation work. Efforts are also being made to develop the well water supplies. The Rural Relations Committee of the Board are taking an active part in furthering these matters and promoting the "back to the land" movement. The Board advocates the establishment of Demonstration Farms.

The Provincial Government is urged to take steps to institute a farmers' page in every daily and weekly paper in the province. Other practical subjects are referred to such as the progress of dry farming, sugar beet cultivation, etc. Satisfactory advancement is reported in live stock breeding and butter-making.

NOTES

The Ontario Agricultural Experimental Union has announced that some 30 experiments with grain, fodder crops, roots, grasses, clover and alfalfas will be conducted throughout the province of Ontario during the year 1915.

Plans are being formed to settle a few of Regina's outlying sub-divisions with market gardeners. A company has been formed, under the name of the Regina Garden City and Agricultural Company, which will break two or three hundred acres of land just north of the city and rent it out in five-acre plots to Belgian refugees for market garden purposes. The company is stated to have already got into touch with nearly a hundred Belgians in Holland, France and England, and it is expected by the Regina men that a large number will be brought over later on in the summer when the situation opens up.

During the year 1914, the Department of Agriculture of British Columbia conducted a number of Women's Institute competitions. These were for Institutes having the best average attendance based on membership, for Institutes having the best programme for 1914, and for the best papers by Institute members on specified subjects.

The Provincial Apiarist at the Ontario Agricultural College, Mr. Morley Pettit, has issued a circular warning bee-keepers to be careful to prevent robbing during the warm days of spring and directing attention to the clause of the law prohibiting the use of immovable frame hives. With the circular he forwards a review of the season of 1914 which he describes as one of the poorest for honey production ever known.

With a view to further the efforts of the Department of Agriculture to arouse a widespread interest in corn growing on the part of Western farmers, a number of the leading banks in Saskatchewan have joined in an arrangement under which, in every district where any stock raising prevails, selected seed will be supplied free to a limited number of farmers who will undertake to grow an acre of corn or green fodder in accordance with instructions furnished by the Department of Agriculture. The action of the banks in this case has been taken with the cordial support of the Department of Agriculture.

The city of Lethbridge is taking up the question of having unused areas of land within the city made available for the growing of garden crops. Unfinished boulevards along the streets are being assigned to citizens who will agree to use them for gardening purposes. Mr. A. M. Grace, Commissioner of Public Works for the city, advises that quite a number have already been granted allotments and applications are still being received. Victoria Park, comprising ten acres, has been let to one grower who will probably devote it to the growing of potatoes. Henderson Park, consisting of thirty-five acres, will be devoted to the growing of oats for the city.

The Charlottetown Guardian of March 4th contains the article by R. H. Campbell, Superintendent of Education, on Elementary Agricultural Instruction that appeared in the February number of the AGRICULTURAL GAZETTE. It also contained the following editorial:

"The article, elsewhere in this issue, on Instruction in Elementary Agriculture, by Mr. R. H. Campbell, Superintendent of Education, will, we feel sure, be read with pleasure and profit. Prince Edward Island has won a name for itself in the fact that it is the first of the Canadian provinces to successfully solve the hitherto difficult problem of co-ordinating agricultural and primary school education. Heretofore the agricultural and educational departments carried out their respective activities, each under its own management and with little regard for the inter-relation. As a result there was overlapping and duplication and agricultural education, although attempted, was unsatisfactory and unpractical. As a result of the policy adopted by Premier Mathieson a common basis has been found, and agricultural instruction now goes hand in hand with the ordinary routine work of the schools. As explained by Superintendent Campbell, the schools are under the direct supervision of inspectors, who are not only educationists, but practical agriculturists. This is as it should be, especially in a province like ours, whose basic industry is agriculture."

Advices received from different parts of the country confirm the good impression conveyed by the reports of the recently held conferences. Dealing with the province of Ontario, in the counties of Peel, Lambton, Durham, Simcoe, Middlesex, Oxford, Brant, Wentworth and Waterloo, an increase of fall wheat sown is reported of from 25 to 30 per cent. From Manitoulin Island and the Districts of Kenora, Temiscaming and Rainy River the stories are the same, as promising abundant crops with a favourable season. In Lambton an increased growth of vegetables is expected and in Norfolk hopes are entertained for good oats, barley, corn, bean and apple crops, but of potatoes there is a decrease in cultivation owing to the prices that prevailed in the district this year. In Dundas more land is said to have been broken and an increase of 10 per cent in spring wheat is anticipated. A decrease, however, in dairy products is thought likely owing to disposal of stock by the farmers. From Peel something of the same kind is reported.

Three propositions have been put up to the farmers of Canada in the "Patriotism and Production" campaign:--

1. Grow staple crops, such as can be stored and transported. There will be a special demand for wheat, oats, peas, beans and flax.

2. Increase production per acre rather than increase acreage. Better cultivation and the best seed will double or treble the yield under favourable weather conditions.

3. Particular attention should be given to live stock. The war put up the price of cereals more than the price of meats--but there is coming a world shortage of meats. It was in sight before the war. Out of the great cattle countries in only one have the cattle kept pace with the people.

The Department of Education of Saskatchewan has recently appointed Miss Fannie A. Twiss of Galt, Ont., Director of Household Science for the province. In connection with the instruction in Agriculture, an Agricultural Instruction Committee has also been appointed to advise on all matter pertaining to the scope and character of agricultural education in the public, high and normal schools. This committee consists of D. P. McColl, Superintendent of Education; W. J. Rutherford, Dean of College of Agriculture, Saskatoon; J. A. Snell, Principal of Normal School, Saskatoon; Dr. R. A. Wilson, Principal of Normal School, Regina; A. F. Mantle, Deputy Minister of Agriculture, and A. H. Ball, Deputy Minister of Education.

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The Agricultural Gazette of Canada

EDITOR J. B. SPENCER, B.S.A.

Issued by direction of
THE HONOURABLE MARTIN BURRELL
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OF CANADA

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MAY, 1915

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Subscriptions should be forwarded to the Editor, Agricultural Gazette, Ottawa.

CANADA'S EXHIBIT

THE Canada Building is a magnificent, dignified structure; its employees are intelligent, courteous, well-chosen men.

There never was seen a more complete, inspiring exhibit of the wonders of a great country.

The Canadians have gone at the thing thoroughly, they have eclipsed completely the exhibits of every one of our individual States, and that is putting it very mildly.

In addition to Canadians, representatives of every state and every county in the United States should make it a point to spend a thoughtful day in the Canada Building.

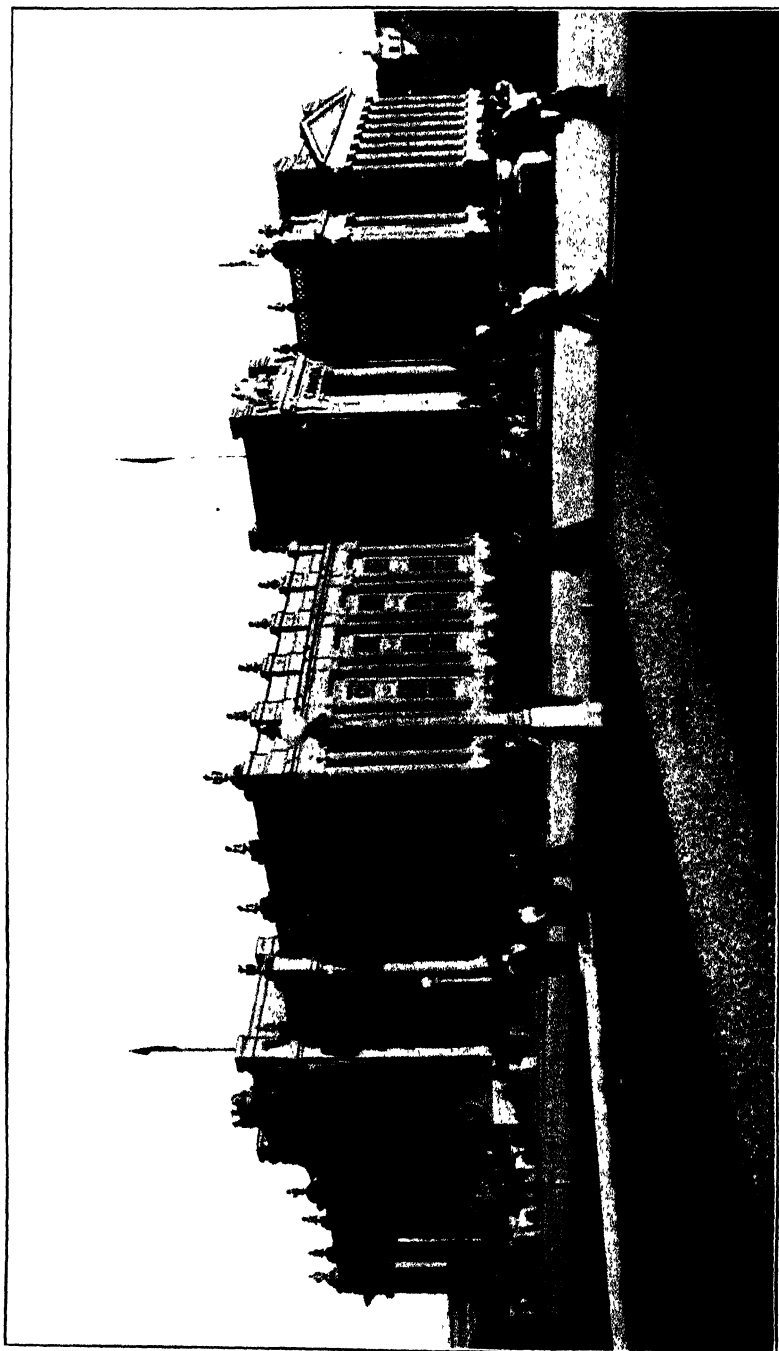
They will learn there that it is possible for a people not afraid of "paternalism or government influence" to do wonders for the building up of a country.

And they will see splendid work done by private corporations, railroads and others, under proper and efficient control by the people.

Marvellously ingenious and striking exhibits tell the story of the great nation that lies north of us. Canada is an empire of strength, beauty, prosperity and unlimited possibilities.

Every citizen of the United States should be glad to know that we have as our brother on the north a people so powerful, a realm so vast and prosperous. Everyone who knows the difficulty of developing and governing a new country will bow reverently to the power that Canada displays.

Editorial in New York Evening Journal, April 15.



THE CANADIAN BUILDING, PANAMA-PACIFIC EXPOSITION

CANADA AT THE PANAMA EXPOSITION

BY COL. WM. HUTCHISON, CANADIAN COMMISSIONER GENERAL

THE Canadian Palace at the Panama Exposition in San Francisco, Cal., is a rectangular building 330 x 210 feet, and a welding of New-Greek and Colonial architecture. Impressive British lions guard the main entrances, and numerous huge columns all around the building contribute to give it an imposing and stately appearance. Gardens surround the majestic edifice. The materials used in the construction of the pavilion are wood, plaster and cement.

In conformity with the general construction scheme of the fair's buildings, an imitation of the Italian stone called Travertine, made of staff, has been adopted for the outside material of the Canadian pavilion. The general colour scheme of the fair buildings has also been followed. The imitation marble columns and granite foundations are so well executed that they give the visitors a perfect illusion of the real materials.

The area on which the Canadian building is built, as well as practically the whole fair grounds, is made-ground, *i.e.*, sand pumped from the ocean immediately adjoining. To secure the foundations of the building, 864 piles 45 feet deep were used. In view of any possible earthquake the frame work is made as strong as possible, bolted timbers being used on a large scale. Fully 2,000,000 feet of lumber have been used in the construction of the Canadian building.

The exhibits displayed are practically limited to specimens of the natural resources or products of the Dominion, *i.e.*, agriculture, fish and game, horticulture, forestry and mines. To lend attractiveness to

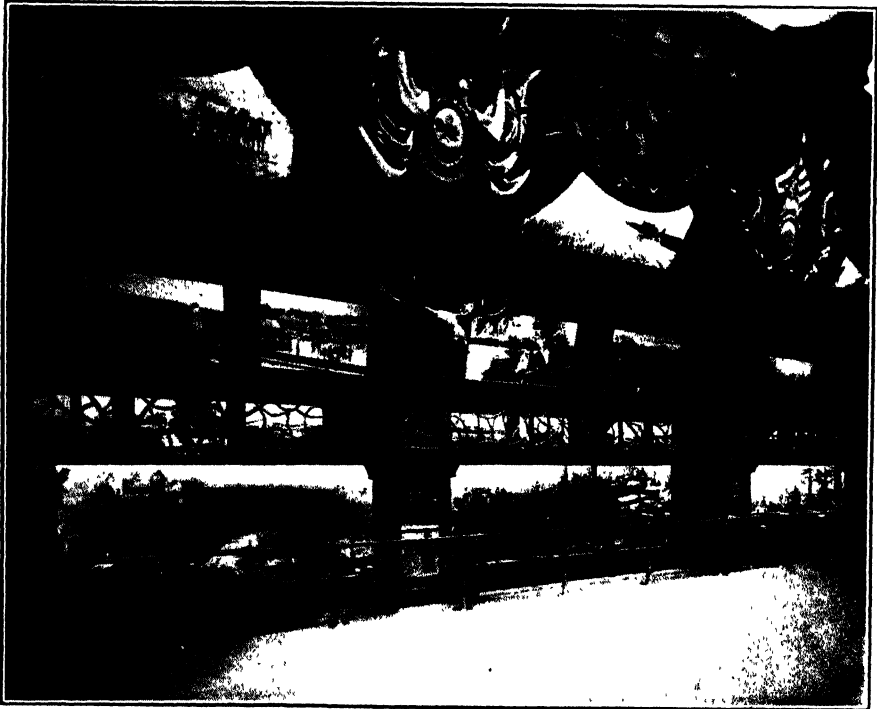
these exhibits, decorative art in harmony with the nature of the different exhibits has been successfully employed. There is a continual flow of visitors in the Canadian pavilion admiring the pictures, panels, etc., made of Canadian grains and grasses and depicting the western prairies, the Canadian orchards and landscapes, etc. The railway and waterway transportation is illustrated by miniature trains and steamers in full operation. We also see brook trout sporting in a live stream fed by a cascade of mountain water; live beavers playing in a most realistic scenery, where art and nature are so effectively blended that the illusion is perfect, and interesting tablets giving useful and interesting information about Canada.

Perhaps Canada's boldest display, taking everything into consideration, is in her fruit, for here she brings her strawberries, her pears, her peaches, her apples and all her native fruits to compete with the great products of California. Here Canada beards California in her own den, as it were, and the display of fruit she makes is an admirable one. The blush of nature has not yet left it and it looks very fresh, very inviting and very beautiful. In one corner is shown the orchards from which all this delightful fruit comes. These orchards placed among fields of blue grass are inhabited by men, women and children in miniature, busily engaged in gathering apples, pears, plums and peaches. On the ground are seen hundreds of baskets of real fruit, put there to show the world the sort that Canada grows. In another part, in jars, is a display of table fruits and jams.

The agricultural resources of the country are shown very beautifully in miniature in one corner of the main exhibit. The past and present of Canada are shown in all their glory. On one side is the rough country of a few years ago with the buffalo, moose, elk, musk-ox, antelope, wapiti and the other smaller game like wild turkey and geese, prairie chickens, snipe and quail of the early days, roaming the flying wilds. From

formation are shown in various ways. The skill of the taxidermist is in evidence in the making and in the placing of the various animals, while assisting in the production of the complete picture are transparencies that are shown by day and by night.

One side of the Canadian exhibit is devoted exclusively to showing the great harvests of grain, the raising and taking care of their abundance of foodstuffs, and the handling



AGRICULTURAL ACTIVITIES PORTRAYED

there the eye is drawn to the background, where the new country is pictured in all its beauty as it is today, great farm touching greater farm, and these covered with never ending fields of wheat, corn, oats, barley, rye and immense orchards of fruits and fruit-bearing bushes.

In the valleys where once roamed the wilder animals are now seen cattle grazing near beautiful homes. These wonderful scenes of trans-

and storing of them. After the fields and harvesting of the crops a wonderful panorama is presented in the shape of a city in which are elevators in which the grain is being deposited. Then from the elevators this grain is shown pouring into ships which haul it over the great lakes and down to the Atlantic ocean, where it is shipped to the European countries. The work of growing, harvesting and hauling this great body of grain

in all its ramifications is shown in this building in a remarkable, practical and lifelike way, giving one an idea of the vast grain-producing resources of our glorious dominion. The railway trains, the elevators, the smaller and larger ships which handle the immense crop of grain are all shown working as actively as in real life, in a way that should challenge the admiration of every visitor and that reflects the

comprising portraits of eminent men of Canada and the Empire, including the late King Edward, the present King George and H.R.H. the Governor-General, and settings of the glorious scenery with which this country abounds. All of which has made the Canadian pavilion the attractive spot of the exposition for the art seeker as well as for the farmer and prospective settler.

It can be said in conclusion that



CANADA'S FRUIT EXHIBIT

greatest credit on the skill of the artists who put this remarkable display into its lifelike, inimitable realism.

Magnificent exhibits are also made of minerals, of coal, of asbestos, of fur-yielding animals, of large and small game, of fish, of bricks and tiles, of specimens of wood, of every sort of agricultural product, of art,

there is every reason to believe, like other Canadian exhibits that have drawn thousands of settlers to Canada's agricultural lands, the Canadian exhibit at the Panama Pacific International Exposition of San Francisco, will prove a valuable investment by advertisement for the country.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

FEDERAL APPROPRIATIONS FOR AGRICULTURE, 1915-16

	\$ cts.
Experimental Farms—Maintenance of Central Farm, and establishment and maintaining of additional branch stations	785,000 00
Branch of Entomology	20,000 00
For the administration and enforcement of the <i>Destructive Insect and Pest Act</i>	100,000 00
For the development of the dairying industries, and the improvement in transportation, sale and trade in food and other agricultural products	150,000 00
Fruit Branch	113,000 00
Towards the encouragement of cold storage warehouses for the better preservation and handling of perishable food products	200,000 00
Health of Animals	540,000 00
Dominion Cattle Quarantine buildings—Repairs, renewals, etc	15,000 00
For the administration and enforcement of the <i>Meat and Canned Foods Act</i>	275,000 00
Publications Branch	15,000 00
International Institute of Agriculture to assist in maintenance thereof and to provide for representation thereat	20,000 00
For the development of the Live Stock Industry	550,000 00
To enforce the Seed Act, to test seeds for farmers and seed merchants, to encourage the production and use of superior seeds, and to encourage the production of farm and garden crops	140,000 00
National Biological Laboratory (Revote)	25,000 00
For the administration and carrying out of the provisions of <i>The Agricultural Instruction Act</i>	25,000 00
Grant to Dominion Exhibition	50,000 00
Exhibitions	280,000 00
For renewing and improving Canadian exhibit at Imperial Institute, London, and assisting in the maintenance thereof	5,000 00
	\$3,308,000 00

APPROPRIATIONS UNDER THE AGRICULTURAL INSTRUCTION ACT

AUTHORIZED BY STATUTE	\$ cts.
Ontario	266,013 64
Quebec	215,310 70
Nova Scotia	68,001 87
New Brunswick	54,308 40
Prince Edward Island	29,138 28
British Columbia	58,265 94
Manitoba	64,421 31
Saskatchewan	68,011 04
Alberta	56,528 82
Veterinary colleges	20,000 00
	900,000 00
SUMMARY	
Voted	3,308,000 00
Authorized by statute	900,000 00
Total	4,208,000 00

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF BOTANY

POTATO INSPECTION IN PRACTICE

BY H. T. GÜSSOW, DOMINION BOTANIST

THE potato regulations under the "Destructive Insect and Pest Act" have been given a preliminary test as to their practicability, their effect upon general shipping, and the quality of potatoes generally.

It will be remembered that the inspection of potatoes was primarily undertaken with the view of preventing the disease powdery scab from being dispersed over uninfected areas in Canada, and of controlling it as much as possible within the infected area.

Incidentally, provision was made under the Act in agreement with the United States, permitting the entry into the United States of potatoes free from powdery scab, subject to rigid inspection and to the condition that all such potatoes were grown from clean seed and on land that has never been infected with powdery scab. For this purpose, farmers who had such potatoes (or believed they had) furnished a statement that the conditions were fully complied with. Either the farmers have not yet become fully cognizant of the importance of powdery scab, or they cannot distinguish common scab from powdery scab, which is indeed most difficult. The result of this attitude was that the inspectors had frequently to condemn potatoes as unsuitable for "first grade." As far as the inspection of the potatoes themselves was concerned, it was found humanly impossible under the existing conditions and because of the general distribution of powdery scab, to continue safely the shipments to the United States. Comparatively few carloads were shipped to the United States—only 63 in

number—when one car was found by the United States potato inspectors in Boston to contain potatoes affected with powdery scab; which resulted in the withdrawal of the necessary United States permits for the entry of potatoes into the United States for this season.

From December 12th, 1914, when the inspection work commenced in New Brunswick, up to February 24th, 1915, the following quantities of potatoes were shipped from the province of New Brunswick:—

Total number of bushels	<i>Table</i>	
<i>Potatoes inspected from December 12, 1914, to February 20, 1915</i>		278,927
Total number of bushels	<i>First</i>	
<i>Grade Potatoes for U.S.A.</i>		49,343
Total number of bushels	<i>First</i>	
<i>Grade Potatoes for Canada</i>		4,500
		<hr/> 332,770

The result of the potato inspection this season must be regarded as quite satisfactory; the preference given to potatoes not affected with powdery scab will eventually induce the farmer to take every precaution to get rid of this disease, which he can if he only makes up his mind to do so. The appreciation of the inspected potatoes from New Brunswick clearly shows the value of inspection as an aid to establishing a good name for same. The disease-free New Brunswick potatoes were even given a preference of 10 cents per barrel over stock from the state of Maine, when sold in the United States. Farmers are again cautioned to take every precaution this spring in planting seed potatoes free from scab of any kind on land that has, preferably, not produced a crop of potatoes before.

THE DIVISION OF ANIMAL HUSBANDRY

LIVE STOCK DISTRIBUTION AND HERD IMPROVEMENT

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

EACH year many splendid pure-bred males of all classes of stock are sold from the Central Experimental Farm, either to agricultural societies or to private individuals, and to be used for breeding purposes. Many of these young sires have, in the hands of good feeders, developed into exceptionally good individuals and have been heard from both as breeders and, in some cases, in the show ring. The policy of the Central Experimental Farm in the sale of these sires is to distribute these as much as possible in districts where these animals can do the greatest amount of good; nevertheless some of the prominent breeders of live stock often make purchases from our herds and flocks. In selling these sires, animals are priced at a fair valuation so as not to undersell the pure-bred breeders in Canada; nevertheless for poor districts where pure-bred breeding stock is not appreciated and kept, animals are often sold on somewhat easier terms in order to open up the

district for improvement and eventually as markets for our breeders of pure-bred stock.

As is necessary in any herd, the herds and flocks are each year subject to severe weeding of all females which are not profitable. This naturally eliminates the breeding of a large number of undesirable males and females which would otherwise accumulate in herds and flocks of these dimensions. Aside from this weeding out of females it is necessary to discard a certain percentage of male and female progeny from profitable stock of good type. These animals are usually altered and finished for the block. Each year approximately 5 per cent of bull calves, 10 per cent of ram lambs, and 15 per cent of young boars are discarded in this way. The aim of this phase of the work on the Central Experimental Farm is to distribute only pure-bred males, and the very best of pure-breeds which we can raise.

THE FRUIT BRANCH

INSPECTION OF FRUIT BASKET FACTORIES

BY D. JOHNSON, COMMISSIONER

THERE are in Ontario at the present time some 25 factories manufacturing fruit packages. The majority of these are in the Niagara Peninsula, though there are individual factories in practically every section of the province.

Formerly there has been no general inspection made of these factories. Occasional visits have been made to them by a qualified officer of this

Branch, but these visits were not frequent, as it was generally considered that the manufacturers were turning out packages that conformed to the requirements of the Inspection and Sale Act, Part IX.

During the past two years, many complaints have been received from growers regarding the packages supplied to them. The poor quality of the veneer and the faulty nailing

were particularly complained of, and in some cases the baskets were not of legal size.

On account of these complaints it has been decided that a frequent inspection of basket factories is necessary in order to protect both the shippers and the consumers.

One such inspection has just been made, and certain features noted. The most essential requirement, so far as the manufacturers are concerned, is that any particular package made by one factory should be uniform in size to the same package made by any other factory. Unless that requirement is enforced, there is a strong temptation to make a "short" package, popular to some growers, but unfair to the consuming public and to the honest manu-

facturer. In order to effect uniformity, a standard form must be introduced which every factory will be required to use.

The use of a two-piece stapled bottom in 6 and 11 quart baskets, and the inadequate nailing of the side bands and handles are features which in many instances will have to be removed. The immense number of baskets which are broken during the shipping season can be greatly lessened by having every basket nailed in a more secure manner.

During the coming summer every basket factory in Canada will be visited once a month, and by this means it is hoped that more care will be given by manufacturers to the strength and uniformity of the packages they are making.

FRUIT INSPECTION WORK

It is gratifying to be able to state that the convictions under Part IX of the Inspection and Sale Act were only 78 for the whole Dominion during the past season as compared

with 105 in 1913-14. These were distributed as follows: Ontario, 48; Nova Scotia, 12; British Columbia, 3; imported fruit, 15.

TABLE OF PACKS FOR APPLES

IN the March number of THE AGRICULTURAL GAZETTE, on page 252, there appears a table of packs of apples. Through a misinterpretation of copy certain packs are stated to be "on end" that should have been "on side." The following is a corrected table, prepared by Mr. D. Johnson, Fruit Commissioner:

DIAGONAL 2-1 PACK			
Apples to the box			
2 1, 4 4	36	Pack on side.	
2-1, 4-5	41	" " "	
2-1, 5-5	45	" " "	
STRAIGHT 3 PACK			
3 wide 5 long	45	Pack on side	
3 " 6 "	54	" " "	

DIAGONAL 2-2 PACK		
Apples to the box		
2 2, 3 4	56	Pack on end.
2-2, 4-4	64	" " "
2-2, 4-5	72	" " "
2 2, 5 5	80	" " "
2 2, 5 6	88	" " "
2-2, 6-6	96	*Pack on side.
2 2, 6 7	104	" " "
2-2, 7 7	112	" " "
2-2, 7-8	120	" " "

DIAGONAL 2-3 PACK.		
2-3, 4-5	113	Pack on end.
2-3, 5-5	125	" " "
2-3, 5-6	138	" " "
2-3, 6-6	150	" " "
2-3, 6-7	163	" " "
2-3, 7-7	175	*Pack on side.
2-3, 7-8	188	" " "
2-3, 8-8	200	" " "
2-3, 8-9	213	" " "
2-3, 9-9	225	" " "
*Usually.		

THE ENTOMOLOGICAL BRANCH

HOUSE-FLY CONTROL

BY C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST

THE necessity of undertaking house-fly control work *early* cannot be too strongly urged. The early flies are the progenitors of the millions that come later in the season. Prevention of breeding and prevention of infection are the fundamentals in house-fly control.

The chief facts in regard to the breeding habits of house-flies are now generally known. The facts regarding their ability to disseminate the causative organisms of typhoid fever, cholera, tuberculosis, dysentery and other diseases are firmly established, and the evidence that they are important factors in the spread of infantile diarrhoea which carries off so great a number of infants every summer is irrefutable.

The following notes are primarily intended to serve as a guide to those who are planning to conduct campaigns during the coming season for the further suppression of house-flies. I have also included references to certain recent investigations having a special bearing on the carriage of disease by flies. It is generally assumed that the chief manner in which the flies carry the bacterial and other disease-causing organisms is upon their legs, proboscis and other external parts of their bodies.

Investigations during the last three or four years on the bacteria-carrying power of the house-fly have demonstrated that the danger of flies carrying bacteria internally, that is, in the stomach and intestines, is much greater than that involved in the carriage of bacteria externally on their bodies and legs. It has been found that certain non-spore-forming bacteria, such as the typhoid ba-

cillus, will live a greater length of time in the digestive tract of the fly than on the legs, wings or head.

When flies feed upon infected matter such as excreta infected with typhoid bacilli, or sputum containing the tubercle bacillus, bacteria are taken into the digestive tract where they may remain in a living condition for some time. Graham-Smith found that the fæces of the fly were infected two days after it had fed on infected material. Not only are the bacteria deposited in the fæces of the fly, commonly known as "fly specks," but flies have the habit of regurgitating their food in the form of small drops of vomit. Flies which had been fed on milk gave on the average 28.3 vomit spots and 2.5 fæcal spots in 24 hours. When fed on coloured food they continued to vomit such coloured food for 22 hours after feeding.

These facts concerning the length of time during which flies which have fed on infected matter may retain and disseminate such infection must be taken in conjunction with the distance which flies may travel and spread such infection. I have found in experiments with marked flies in Ottawa that under city conditions flies will travel at least half a mile from the point of liberation, and under rural conditions they will travel a mile or more if the meteorological conditions are favourable. It will be understood, therefore, that flies may carry the infection a considerable distance during the period when they are infective.

The enormous number of bacteria carried by flies and the gross nature of the infection carried by flies col-

lected in insanitary districts as compared with flies occurring in more sanitary surroundings is strikingly indicated by the work of Drs. Cox, Lewis and Glynn in Liverpool (Eng.) in 1912 and in the summer of 1913 by Dr. Armstrong in New York.

On flies collected in insanitary congested districts in Liverpool, Cox, Lewis and Glynn found the number of ærobic bacteria varied from 800,000 to 500,000,000 per fly; flies from cleaner, less congested districts carried from 21,000 to 100,000 bacteria per fly. A special examination for bacteria of intestinal origin, indicating, as a rule, fæcal contamination, showed that the flies from the sanitary districts were carrying from 10,000 to 333,000,000 bacteria per fly while the flies from the more sanitary districts carried from 100 to 10,000 bacteria per fly.

In connection with a demonstration in New York in 1913 of the effect of fly suppression in the reduction of infantile diarrhœa, in which two city blocks were taken, one being "cleaned up" and rendered as flyless as possible and the other left untouched, bacterial counts of the flies were made. The average number of bacteria (agar culture) from flies in the clean houses was 13,986 per fly and from the dirty houses 1,106,017 bacteria per fly. The average number of intestinal organisms per fly from the clean houses was 4,489 as compared with 292,117 per fly from the dirty houses.

The foregoing results of accurate bacteriological examination of "wild" flies, that is, flies caught in the open and not artificially infected, are too significant to require any further explanation and are a sufficient proof of the statement that *every fly is a germ carrier. No fly is free from germs and the greater the opportunities a community provides for the infection of the flies, the greater and the more serious will be their infective condition.*

The house-fly is the sanitary index

of any community. It is the product of insanitary conditions and accordingly the question of its suppression is primarily a sanitary one. The sanitary status of a city can be judged by the abundance or scarcity of house-flies. Prevention of breeding and infection is the most important step in house-fly suppression. While the expression "Swat the Fly" and the competitions which have taken place for the killing of flies have served a good purpose in focusing public attention on the necessity of removing this evil, it cannot be emphasized too strongly that the killing of the flies themselves, except at the beginning of the fly season, is really useless and about as effective as the efforts of the old lady to sweep back the sea with her broom. In no competition, and I have obtained the results of most of them, in this and other countries, has the number of flies destroyed exceeded the number which any normal-sized heap of stable refuse is able to produce. It is not the flies themselves that we should kill, but their breeding places and sources of infection that we should wipe out.

As briefly as possible the steps which should be taken in a house-fly campaign will now be outlined:

PREVENTION OF BREEDING

Horse manure is the chief breeding place of the house-fly.

STABLES:

Construction. -Floors should be constructed of concrete or other impervious material. Earth floors or badly constructed wooden floors breed flies.

Manure. -Manure should be stored in fly-proof receptacles preferably of concrete and removed regularly at short intervals; in the summer the manure should be removed twice a week, or every day if possible.

Segregation. -Stables in cities should be segregated and confined to

specified areas with a view to limiting the possibility of nuisance and facilitating inspection.

OPEN CLOSETS:

The open closet is a breeding place and frequently a source of disease contamination, especially from "typhoid carriers".

Construction.—The open closet should be fly-proof in every particular.

Maintenance. The wet method of excreta disposal is preferable to earth disposal as the latter is not absolutely safe; flies can emerge from material buried under several inches of earth. Our experiments have shown that they will emerge from a depth of two feet below the surface of the soil.

GARBAGE AND ORGANIC REFUSE

Winter accumulation should be removed as soon as possible to prevent spring breeding of flies. Every community should institute a "cleaning up" day or week for the purpose.

Domestic care.—Use a fly-proof garbage can. Burial or incineration of garbage should be regular and frequent where civic collection does not exist.

Civic disposal.—The abolition of "dumps" of organic refuse in or near cities is necessary. The most sanitary and safest method of civic refuse and garbage disposal is by the use of an incinerator.

OTHER FLY BREEDING NUISANCES

Brewery waste makes a good breeding place for flies, as is the case also of piggeries, poultry houses, and homes of domestic pets, such as rabbits, when not kept clean.

PREVENTION OF INFECTION

FOOD:

In shops.—Require covering of food by bakers, grocers, confec-

tioners. Boycott tradesmen not covering food.

In houses.—Protect all food which flies could infect.

SICK:

Keep flies out of the hospital and the sick room by efficient screening. Protect from flies all infectious discharges, especially tubercular sputum and typhoid discharges.

Infants.—Screen infants when on the street, and when asleep in the home.

EDUCATION:

The most important factor in the campaign. Enlist support of newspapers and the press, who are very ready to help.

The education of children (especially boys) in the schools, mothers in the home, merchants in the shop, and dairymen, is necessary.

ENLISTING HELP

The active influence of all persons and organizations interested in social reform and hygiene should be enlisted, including Women's Clubs and Associations, Civic Improvement and Social Welfare Societies, Boy Scouts, Visiting Nurses, and especially Sanitary Inspectors.

LEGISLATION

First induce a correct civic attitude which regards health as a civic asset and understands that a city of healthy people is cheaper to maintain and more productive and therefore of greater value than a city where sickness is common.

Then secure legislation to deal with the suppression of "public nuisances", the proper construction and, if possible, the segregation of stables, and cowsheds, the protection of food in stores, the upkeep of dairies and the maintenance of closets.

THE RURAL PROBLEM

The fact that our milk supplies come chiefly from the country, where the fly problem is of course most serious and the sanitary conditions least sanitary, renders this a very serious matter. The conditions are chiefly due to ignorance and carelessness.

The disposal of the manure presents a different problem in the country, as the farmer cannot always remove it at frequent intervals, and the alternative method of treating the manure with an insecticidal substance introduces the question as to the effect of the insecticide upon the fertilising properties of the manure. If the farmer can cart the manure away from the barns and spread it immediately on the land the problem is very greatly minimized. The investigations of Dr. Shutt, the Dominion Chemist and others have shown that the storing of manure reduces its manurial value.

The most effective insecticidal substance found in a lengthy series of experiments by the United States Department of Agriculture is borax in the commercial form and used either dry or in solution. It is used

in the proportion of three-fifths of a pound to every eight bushels or ten cubic feet of manure immediately on its removal from the barn. The best method of applying the borax is to dust the dry chemical over the manure, particularly around the outer edges of the pile, by means of a flour-sifter or sieve, and afterwards sprinkle two or three gallons of water over the borax-treated manure.

In the stables chloride of lime has been found effective and the use of any of several commercial disinfectants will assist in the reduction of flies.

Other necessary measures are the screening of all open privies and care in their maintenance; the screening of dairies and cowsheds and general cleanliness in stables and dairies.

Enforcement through licenses. These requirements could be largely enforced by the licensing authorities and should be so controlled through licenses.

In the *country house* and *cottage* the general principles which have been outlined should be applied, especially in the maintenance of the outdoor closet and the care of garbage.

THE DAIRY AND COLD STORAGE BRANCH

SOME NOTES FROM THE FINCH DAIRY STATION IN 1914

BY GEO. H. BARR, CHIEF DAIRY DIVISION

THE Finch Dairy Station was operated during the entire year. Cheese was made from May 15th to November 7th. During this period there were several shipments of milk and cream made to Montreal and Ottawa as well as occasional churnings of butter for the patrons and local trade. During the balance of the year the output consisted of butter, milk and cream

shipped to Montreal and Ottawa.

	Lb.
Total Milk received	2,356,202
" Cheese manufactured	131,906
" Butter manufactured	21,247
" Milk shipped	60,800
" Fat in cream sold	14,407 14
Amount paid to patrons	\$28,108 74

Average prices paid the patrons per 100 lb. of milk each month:

January.....	\$1 72	July.....	\$1 07
February.....	1 67	August. . .	1 15
March.....	1 19	September. .	1 34
April.....	0 98	October . . .	1 44
May.....	1 04	November... 1	44
June.....	1 04	December . .	1 61

Average for all milk received during the year, \$1.193.

The average per cent fat in the milk delivered from March 1st to October 31st was 3.45. In 1913 the average for the same period was 3.36 per cent; this slight increase in fat in the milk delivered to the factory during the above period in

1914 at 30 cents per lb. of fat amounts to \$541.50. As all the milk is now paid for on the fat basis the patrons are beginning to take a keen interest in increasing the per cent of fat in the milk.

The following table shows the difference between the average production of milk and money received per cow in the best and poorest herds sending milk to the station for different periods. The months given cover the entire period the patrons sent milk to the factory.

Highest and Lowest Average, per Cow, 37 Herds, 469 Cows Highest Average per Cow	Months Sending Milk	Lb. Milk	Money Received	No. of Patrons
Lowest	12	6285	\$74 83	7
Highest	12	3219	38 85	7
Lowest	11	4809	56 40	3
Highest	11	2609	31 21	3
Lowest	10	3972	45 12	3
Highest	10	2729	30 97	3
Lowest	9	3959	45 60	6
Highest	9	2977	32 84	6
Lowest	8	3940	44 02	12
Highest	8	2220	26 21	12
Lowest	7	3022	35 62	6
Highest	7	2006	23 96	6

The average pounds of milk sent to the factory per cow from 469 cows was 3,581. The average money received per cow was \$41.81. If all the herds had averaged as much per cow as the best herd did, 6,285 lb. of milk (24 cows in herd) there would have been 1,268,176 lb. more milk delivered at the factory in 1914, which at the average price paid the patrons per 100 lb. of milk (\$1.193) would have given the patrons \$15,129.33 more money or an increase of \$32.25 per cow.

Three years ago there was not a cow being tested in the Finch district; in 1914 there were about 200 tested.

The following statement of shrinkage in the milk supply bears on the question of the advisability of providing some suitable feed for the cows to supplement the pastures during the dry spells which come almost every summer. Only 22 herds contained the same number of cows in June, July and August. The

total number of cows in these herds was 285, and the shrinkage is calculated on this number.

These cows gave 206,127 pounds of milk in June, 169,575 pounds in July and 126,096 pounds in August, or a shrinkage of 17.7 per cent for July and a further shrinkage of 25.6 per cent for August.

Careful experiments show that cows properly fed during the summer months will shrink about 10 per cent per month after June. Ten per cent shrinkage on the June milk from these 22 herds would equal 20,612 lb., and on the July milk 16,957 lb., or a total of 37,569 lb. The difference between 80,031 lb., the actual shrinkage, and 37,569 lb., or what may be termed the unavoidable shrinkage of 10 per cent is 42,462 lb., which additional quantity these patrons might have had if they had provided suitable soiling crops for their cows during July and August. The value of this quantity at the price paid the

patrons per 100 lb. of milk for July and August (\$1.11 would have been \$470.26. This, of course, is the loss for only two months. If the cows are allowed to fall off in July and August, the yield is affected to the end of the milking period, and the loss thereby is difficult to estimate.

The greatest shrinkage in any one

herd in July was 29 per cent. The greatest shrinkage in August was 38.1 per cent less milk than in July; the smallest shrinkage in August was 16 per cent. The average shrinkage per cow in July was 128.3 lb., in August 152.4 lb. A 10 per cent shrinkage per cow would have been only 72.2 lb. in July and 59.4 lb. in August.

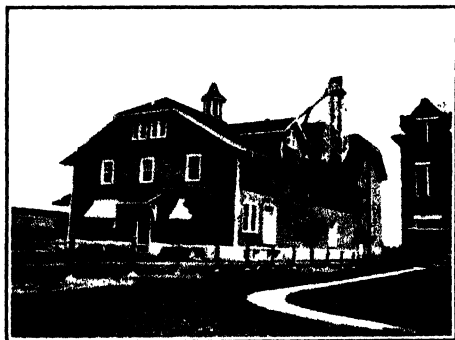
FRUIT REFRIGERATION INVESTIGATIONS AT GRIMSBY, ONTARIO

BY EDWIN SMITH, B.Sc., IN CHARGE COLD STORAGE EXPERIMENTAL PLANT, GRIMSBY, ONT.

IT has for a long time been believed that refrigeration facilities located in country points for the use of fruit-growers and shippers in the pre-cooling, assem-

handled, many of which were assembled over three or four days. Many growers held medium or small lots of tender fruits for a few days for better markets. Blockades in transportation and marketing that often cause heavy losses in tender fruits were met by holding fruit a few days in cold storage. During the winter the warehouse was used for the cold storage of apples, pears and cabbage.

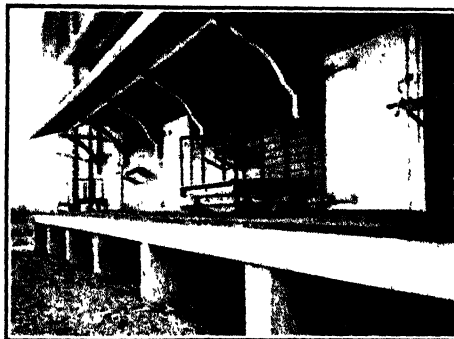
The project is having its greatest effect at present in a demonstrative way. In many instances from \$50 to \$200 per car was gained by taking advantage of this plant. In the



EXPERIMENTAL COLD STORAGE
WAREHOUSE, GRIMSBY, ONT

bling or cold storing of tender fruits, offered great possibilities for the improvement of the fruit trade. Many of these possibilities were demonstrated and their value realized in practical use last season in connection with the experimental pre-cooling and fruit storage warehouse at Grimsby, Ontario.

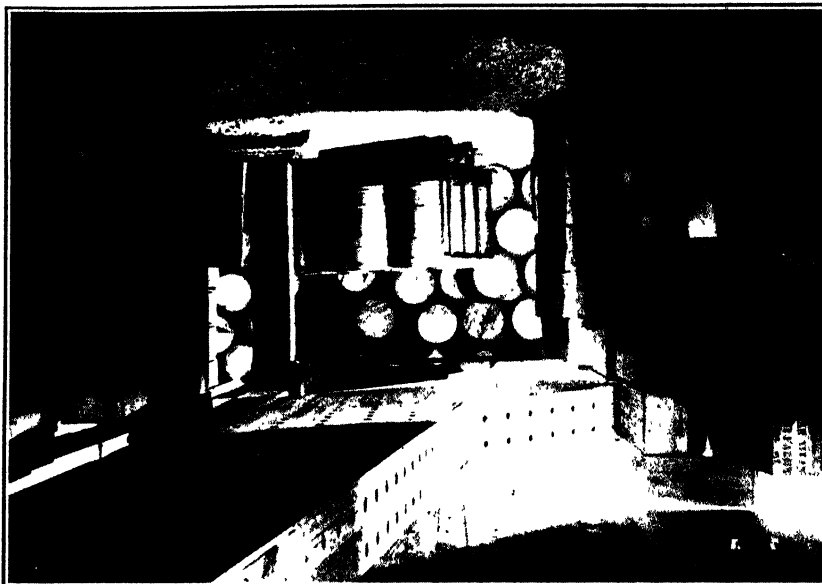
The total failure of the peach crop in this part of Ontario greatly cut down the fresh fruit shipments, but even with cherries, plums, tomatoes and pears the plant operated at about one quarter full capacity. Thirty-nine cars of pre-cooled fruit were



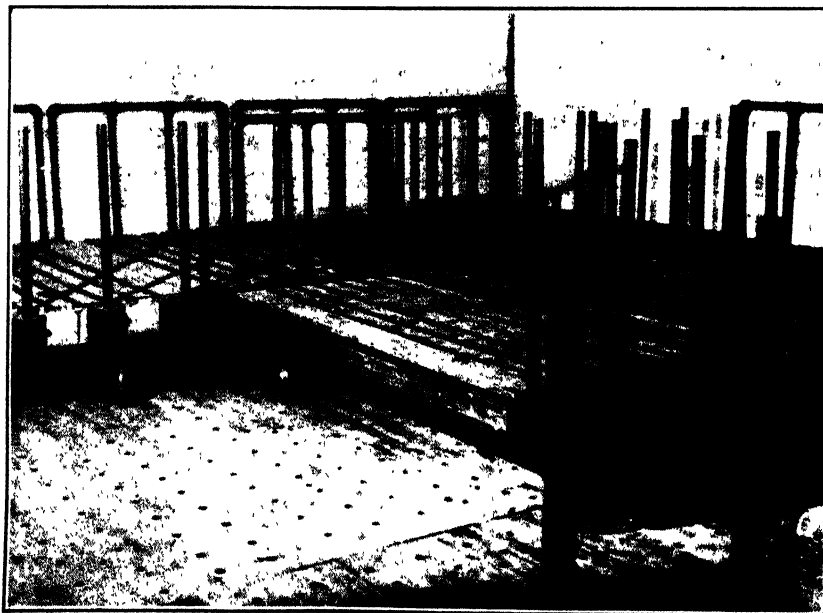
LOADING PLATFORM AT COLD STORAGE
WAREHOUSE, GRIMSBY, ONT.

case of the raspberry crop, which is not important in this district, \$3000 was saved the vicinity in a single week.

During the winter and spring the



GRIMSBY COLD STORAGE -INTERIOR VIEW OF GENERAL STORAGE ROOM



INTERIOR VIEW OF GRIMSBY COLD STORAGE—SHOWING TRUCKS AND PERFORATED FALSE FLOOR FOR PRE-COOLING

Grimsby equipment has been put into shape to operate at full capacity during the coming season, in view of the present prospects for a heavy fruit crop.

The services of Mr. J. M. Creelman of Guelph, have been secured as scientific assistant. Mr. Creelman has had a wide experience in handling fruit in Ontario, British Columbia and California.

The work during 1915 will be carried on in three divisions: (1) Commercial Service; (2) Experiments and Demonstrations in Shipping; (3) Scientific Records on Fruits under different Cold Storage Conditions. The first division will cover the pre-cooling and shipping of fruit for shippers and growers in a strict commercial manner, charging fixed rates for the service. The second will take up the handling of fruit as well as its refrigeration; experimental shipments in carload lots will be carried out, using packages and methods that are not now in vogue in the Niagara district, but which are satisfactory in other fruit districts and markets; a study of the costs and returns from these methods and packages; the effect of careful

handling upon long distance shipments; methods of loading and icing refrigerator cars; the rate of pre-cooling and its effect on fruit, etc.

Under the third division comes the experiments with small lots of the leading varieties of fruits under different cold storage conditions, carrying on the work started last year which covered the following:—

KIND OF FRUIT:	VARIETY:
Strawberry	Williams
Cherries	Governor Wood
	Early Richmond
	Montmorency
Gooseberries	Columbus (European)
	Downing (American)
Black Currant	Prince of Wales
Red Currant	Red Dutch
Blackberry	Lawton
Blueberry	Canada
Raspberry	Cuthbert
Plums	Bradshaw
	Washington Gage
	Yellow Egg
	Reine Claude
	Grand Duke
Tomatoes	Earliana
	Chalk's Jewel
	Danish Export
Grapes	Niagara
	Concord
	Agawam
	Lindley
	Wilder
	Catawba
	Vergenne

THE HEALTH OF ANIMALS BRANCH

HOG CHOLERA SERUM

BY Order-in-Council a change has been made in the regulations regarding hog cholera as follows:

Regulation 881₂. The importation, manufacture, sale or use of hog cholera serum or virus, except by an Inspector acting under the special authority of the Veterinary Director General, is prohibited.

Hitherto the importation and use of Hog Cholera Serum has been prohibited, and this change has been made at the request of the Veterinary Director General, in view of the possibility

of affecting a saving of hogs which have been exposed to infection but are not visibly diseased. It is intended in all cases where the conditions appear suitable to use the serum for the purpose of saving those hogs which have been exposed to infection in the hope of lessening the expenditure for hog cholera. At first, however, the Veterinary Director General intends to try it on only a limited scale and extend its use later, if experience shows it to be of real value.

THE ANIMAL CONTAGIOUS DISEASES ACT

BY Order-in-Council the regulations under "The Animal Contagious Diseases Act." approved under date the 30th November, 1909, and amendments thereto, are further amended by adding the following section:--

"Section 88 $\frac{3}{4}$. The feeding of swine upon garbage or swill, either raw or

cooked, obtained elsewhere than on the premises where fed, is prohibited, unless special permission in writing is first obtained from the Veterinary Director-General."

This amendment shall not come into force until three months after publication thereof in the Canada Gazette.

ONE-DAY-OLD CHICKS

By Order-in-Council the Order under "The Animal Contagious Diseases Act", of date the 9th day of November, 1914, as amended by Orders of date the 11th, 13th, 19th, 23rd, 24th, 30th of November, 10th, 15th, 21st of December, 1914, 4th, 11th, 27th of

January and 4th of March, 1915, is hereby further amended as follows:--

"One-day-old chicks may be admitted from any part of the United States, provided no hay, straw, chaff, or similar fodder, is brought in with them."

THE LIVE STOCK BRANCH

FEDERAL AID TO FAIR ASSOCIATIONS

MANY factors have influenced or retarded to a greater or less degree the progress of stock-raising in this country. It may safely be asserted, however, that few have given greater encouragement or been productive of more far-reaching efforts than the influence exerted, both directly and indirectly, by fairs and exhibitions. Show-yard competition and the desire to produce and exhibit winners have called forth the best efforts of breeders. The success achieved by leading stockmen has often been the means of starting others to attempt better things. Individual results taken singly may seem small; taken collectively, they assume great proportions, and, it is to be remarked, that the work of a few men has exerted a wide influence upon the progressive development of stock breeding as an

industry. The show-yard is the battle ground where each exhibitor may learn, through success or failure, the results of his work. Without the stimulus thus created the great levelling-up process would not be possible, nor would the business of stock-raising have developed as it has done.

Indirectly fairs and shows have wielded a powerful influence in informing the farmer and in teaching him the necessity of raising and maintaining better animals, as well as giving him correct ideas regarding the suitability of breeds and the correct type in each case. This influence is appreciated fully by those only who have been closely connected with the industry and who have studied its growth carefully. It may be of interest to note that in the case of a certain show in Canada,

started within the last decade under the supervision of the Live Stock Branch, it was necessary in the beginning to send typical animals properly fitted for demonstration purposes to illustrate the type, quality and finish required in first-class animals. A few years later there were animals entered that would come into the short leet in their respective classes in any Canadian show. The institution of this particular show has done much to bring about a new era in that district.

The live stock industry has from the beginning been of paramount importance in the agriculture of this country, and the record of the annual fairs may be considered as representing the history of its progress. While, however, fair associations have done much to promote and encourage live stock production, it must be admitted that their work has often been seriously hampered through lack of sufficient funds. In order to induce the presence of exhibitors, locally and from a distance, the prizes offered must be such as to appeal to the breeders who are under heavy expense in fitting and showing their stock. The conditions that obtain at the present time make it even harder than heretofore for fair associations to obtain the requisite funds to enable them to meet the steadily increasing expense incidental to growth and to sufficiently increase the prizes offered.

Realizing that the time is oppor-

tune and that the judicious expenditure of comparatively small amounts of money would prove particularly beneficial to the live stock industry, the Dominion Department of Agriculture, through the Live Stock Branch, has decided to offer financial aid to shows reaching a certain standard, the object being to enable them to improve and increase their prize list with the view of encouraging production.

The conditions governing federal aid to fair associations may be briefly stated as follows:—

Fair Associations whose shows are open in all classes to the whole of Canada, and which have paid out in the utility classes of live stock and poultry at their last preceding show, the sum of five thousand dollars, or over, will be given a grant equal to 50 per cent of the actual amount paid out, the maximum grant to any show not to exceed the sum of five thousand dollars.

Fair Boards, when making application to the Live Stock Branch for this grant, must forward a certified and properly subscribed statement of the auditor's report of all prize money paid out at the last show in the classes previously referred to; as also a copy of the proposed prize list for the succeeding year. For the purposes of this grant, the prize list must be approved by the Live Stock Commissioner.

All pure-bred live stock exhibited at shows which receive the benefit of this grant must be registered, in the name of the exhibitor, in the Canadian National Live Stock Records.

In all questions of policy, or matters of dispute, the decision of the Live Stock Commissioner shall be final.

Canada, according to past records, gets into the doldrums, through one cause or another, every twentieth year, and then gets away to a fresh run of prosperity again. That run, on this particular occasion, is now started, and is in a "back to the land" direction. Everybody is talking farming, city lots are now almost unsaleable, building is at a standstill in the larger towns, and a sharp lookout is being kept on good farms for sale, and many transactions in this direction are taking place. Many speculators are trying to unload city property in part payment of farm land transactions. During the spring and summer many men who less than a year ago turned up their noses at the offer of a job on the farm will be glad to take just such a job now.

Border Chief, in

The Scottish Farmer. Glasgow, March 27th, 1915.

THE SEED BRANCH

WORK OF THE PAST YEAR

BY GEO. H. CLARK, B.S.A., COMMISSIONER

THE work of the seed branch falls naturally into three main divisions: seed growing, seed testing and seed inspection. The production and use of better seed is encouraged through subventions to the provinces for field crop competitions, seed fairs and provincial seed exhibitions and to growers of certain field root and vegetable seeds on their product held for seeding in Canada. Seeds are tested for purity and germination, and grass and clover seeds are graded for farmers and seed merchants at the Ottawa and Calgary laboratories. A system of inspection is employed to regulate the trade under the Seed Control Act. Investigations are made, educational material is distributed and information is supplied through correspondence, press notices and publications.

SEED GROWING

During the year 1913-14 there were conducted throughout Canada 313 field crop competitions, 181 seed fairs and 10 provincial seed exhibitions. The sum of \$27,971.18 was paid out to the provinces as subventions on this account, which is practically one-half of their total cost. Beginning January 1st, 1914, the amount made available to the provinces was increased by about 33 per cent. A field crop competition may now include five kinds of crops instead of three and a provincial seed exhibition may receive \$600 instead of \$400. The extra \$200 is intended to encourage the production of registered seed. These subventions are paid on the basis of

not more than two-thirds of the moneys awarded to competitors as cash prizes.

Twelve growers of field root and vegetable seeds received subventions on their 1913 crop. The greatest variety of seed was grown by the Ontario Seed Company. The Dominion Sugar Company, Berlin, Ont., are large growers of sugar beet seed, but received subvention on only 5,035 pounds as the balance, some 38,000 pounds, was exported. Farmers in Yarmouth County, N.S., grew most of the Swede seed. A small quantity, and also some mangel seed, was grown at Lion's Head, Bruce County, Ont. Subventions amounting to about one-eighth of the retail price were paid on 10,700 pounds of seed as follows: Swede 906, mangel 2,326, sugar beet 5,035, beet 54, carrots 47, radish 465, tomatoes 1,119, cabbage 12, onions 357, lettuce 243, cucumber 66 and musk melon, 70.

SEED TESTING

The samples tested at the Ottawa laboratory for the past year include: ordinary samples, 11,373; cereal investigation, 2,065; corn investigation, 1,694; individual ear tests for corn inspection, 4,400; soil investigation, 573; special investigations, 408; official tests, 956. At the Calgary laboratory 3,733 ordinary samples were tested and special investigations were conducted. The cereal testing work was smaller at Calgary than for several years due to the excellent condition in which the grain was harvested in 1913, but the grading of grass and clover seed increased over 50 per cent. The

work of the Ottawa laboratory shows a steady increase from year to year. Most of the trade samples are received from January to April, inclusive. The number of these samples received daily during these four months averaged 66. The special investigations receive attention during the other months.

SEED INSPECTION

The system of inspection in connection with the administration of the Seed Control Act is gradually being extended. The district officers of the Branch are responsible for the inspection work in their respective districts. During the trade season, a period of about three months, they were assisted by twenty-two temporary seed inspectors. In the spring of 1914, 5,173 dealers and farmers were visited, many of them several times. Weekly reports were forwarded to the chief seed inspector of the persons visited, the kind and quality of seed for sale and the source of supply. Information was given and official complaints were made of supposed infringements of the Act, accompanied by official samples of seed improperly exposed for sale. In all, 956 official samples were received and 708 were found to be violations. Most of these were first offences or of a very minor nature. There were 31 prosecutions, all resulting in convictions.

INVESTIGATIONS

The inquiry into the quality of seed grain, flax and corn used in Canada, begun in the spring of 1913, has been completed and has been published with suggestions for improvement.

The accumulation and disposition of screenings at the terminal elevators, the various uses to which they are put, their composition, feeding value and the danger of weed dissemination in feeding them to

stock, have been given further attention during the past year.

An investigation into the weed seed content of farm lands was begun in 1914 with the object of discovering the relation of their prevalence to different cultural practices.

Information has been received at the Calgary office on timothy seed production in the prairie provinces, and suggestions are given which should develop this industry in regions not well adapted to cereal grains.

EDUCATIONAL MATERIAL

In 1914 some 500 economic and weed seed collections were prepared and distributed to promote agriculture in schools recommended by the provincial departments of education. A number were sold to seed merchants and agricultural organizations at \$2 each.

Sets of 34 hand-sieves were distributed to agricultural representatives or demonstrators in Ontario and Quebec.

Material was prepared for some of the leading exhibitions, and assistance was given to the provinces in conducting seed judging classes at short courses, seed fairs and on demonstration trains.

INFORMATION

Special information is given by correspondence, and articles of general interest relating to seed supply and crop production are contributed to the press and departmental publications.

Branch publications now in press or recently published are:—

Bulletin S-8, Weeds and Weed Seeds.

Bulletin S-9, An Inquiry into Seed Grain, Corn and Flax.

Annual Report for 1913-14.

PART II

Provincial Departments of Agriculture

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE, INCLUDING
AGRICULTURAL COLLEGES

FARMERS' CLUBS

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THE farmers' institutes in this province correspond to some extent to the farmers' clubs of Ontario, with the exception that the farmers' institutes receive a government grant and Ontario farmers' clubs do not, and, that we have no societies corresponding to the farmers' institutes of Ontario.

The farmers' institutes of Prince Edward Island are supposed to embrace at least four school districts, and some of them cover five or six or even more. In a Catholic settlement the bounds of the institutes are generally co-terminus with the bounds of the parish.

Nearly all the institutes do some co-operative buying and selling. We have what we call clubs in the institute, but they do not correspond to Ontario clubs; for instance, the Cornwall institute is composed of four school districts and in it they have three clubs.

The Department of Agriculture gives a grant of \$30 for the purchase of pure bred stock. Cornwall institute has been using this altogether to add to the purchase of bulls. The grant of \$100 is given by the institute to one club one year, and to

another another year, so that there is in this institute three bulls, one owned by each of these clubs.

It is seldom that these clubs hold meetings other than business meetings connected with the management and sale or purchase of the stock. I think that there are quite a number of these clubs in the different institutes, but the clubs as clubs get no grants from the department and make no report to it. We recognize them merely as members of the institute.

Last spring I happened to be at St. Chrysostome in Prince county and was surprised to learn that they had a club there. This was entirely different from the others. They had a meeting every week in the school to discuss educational work. That night they were taking up the feeding of cattle, and one man in the district had undertaken to feed some cows according to the best information that could be had and was to report on it. There were three clubs in this institute running on this line, and it is possible there may be others of the same kind in the province, but, if there are, we do not have information of them.

ONTARIO

BY G. A. PUTNAM, SUPERINTENDENT OF FARMERS' AND WOMEN'S INSTITUTES

THE history of agricultural development in Ontario contains evidence of the many beneficial results both to the individual and to the community following the organization of local societies (Farmers' Clubs) for the purpose of studying, discussing and debating agricultural problems, improving the members in a literary way, and affording a healthful social life. Long before Farmers' Institutes were thought of in Ontario, we found here and there throughout the province local organizations of farmers formed with a view to affording the members an opportunity of interchanging experiences in the practice of agriculture, discussing available literature in the form of agricultural journals and books on agriculture, holding debates, usually as to the comparative value of different methods in agricultural practice, giving addresses upon set topics, etc. In the early days of the Institute, twenty-five to thirty years ago, many of the practical farmers called upon to accompany the Agricultural College staff in the Institute campaigns were men who had gained their first experience in public speaking and debating at the local Farmers' club. Guelph with its Fat Stock club, East York with its Farmers' club, were centres for the best farming in the province in the days when an agricultural college for the province was first being talked of. The success of the farmers in these districts and many others was in no small measure due to the advantages enjoyed through local clubs.

In the Institute campaign of 1907-08 the lecturers were instructed to give encouragement to the formation of Farmers' clubs. The district representatives were also asked to use their influence and give assistance in the establishment and conduct of these clubs. As a result of these

special efforts we found clubs established in many sections of the province and several counties had from six to twelve organizations, while Waterloo county reported thirteen clubs with a central organization (County Board of Agriculture) made up of representatives from individual clubs. While the result was quite gratifying so far as the number of clubs organized was concerned, the proportion of organizations which continued to hold monthly or semi-monthly meetings from year to year was rather discouraging. Notwithstanding the fact that many clubs have disbanded, the total number is gradually increasing, and the farmers are coming to appreciate as never before the benefits to be derived and the advantages enjoyed through the local organization.

While the Department of Agriculture published a booklet giving suggestions as to organization, constitution, by-laws, topics for discussion, etc., and offered to send an organizer and provide a speaker free of charge at one meeting a year to those organizations which held at least four meetings on their own account, the clubs for the most part carried out their work independently and were not given a status in connection with the Institutes or other agricultural body. It was a case of giving suggestions to the farmers as to how they might help themselves, but no assistance was given by way of money grants, and very little in other ways.

OBJECT OF THE CLUBS

The object of Farmers' clubs as set forth in the constitution is as follows:—

“To encourage and maintain a deeper and more general and intelligent interest in all that pertains to agriculture in the broadest sense, by holding meetings at which farmers may receive and give in-

formation, suggestions and experiences, and study together how best to improve themselves and to help their fellow farmers; also to afford an opportunity for debate and study to its members, that they may thus become accustomed to public speaking and help to develop talent along those lines that might otherwise remain dormant; to have them present addresses upon subjects relating to farming and dealing specially with the conditions existing in the locality; to increase the knowledge of and interest in the largest questions (not sectarian or political) of the nation and which affect the social life and financial position of the farmer; to create and stimulate an ambition in our farmers and especially the younger men to be successful in the truest sense and to not only raise the calling of the farmers to the place it should occupy in keeping with its importance to the state, but also to make use of his successes, opportunities and power, to make Ontario a still more desirable province to live in; to hold meetings once a month and possibly one every two weeks during the winter season.

"When a representative of the Department is in attendance discussions or addresses of a racial sectarian or political nature must be avoided, and we would advise the officers of local clubs not to introduce questions of this nature at their regular meetings. There are plenty of questions bearing directly upon their calling which can be discussed without entering the political or sectarian field.

"To carry on experiments among the members and to report upon these at the meetings.

"Co-operation in production, selling, marketing and buying if it is decided to make purchases through the club, we would advise that the local merchants be asked to give quotations, and unless the goods desired can be purchased at a considerably lower rate elsewhere we would advise that they be secured locally. You cannot get along without the business men of the town and village, and provided you can get the quality and class of goods desired, it is well to give them the preference."

The clubs are encouraged to interchange papers among adjoining organizations and also to arrange for members of one club to give the programme at adjoining clubs.

DOINGS OF CLUBS REVIEWED

A review of some of the things being done by the 300 clubs of Ontario will be of interest. The work of the club is varied as it must be to embrace the aims for which it stands.

At the meetings topics directly bearing on the financial improvement of the members through improved methods of soil cultivation, drainage, seed selection, harvesting, etc., are exhaustively discussed. The selection and breeding of horses, cattle, sheep, swine and poultry are all considered, and the plans of buildings for their health and comforts in the economy of production, become items of interest.

The spirit of co-operation follows as a natural consequence, the union of a number of men as members of an association for the mutual benefit of each and all. While this spirit is very small at present it has grown considerably within the last few years. The co-operative buying of supplies is a big feature of this spirit. Seed grain, live stock, feeding stuffs, sugar, salt, binder twine, wire fencing, etc., are all included in these transactions. By buying in bulk, a dealer is able to quote lower prices, which makes it more profitable for both the buyer and seller.

The co-operative sales through the clubs have been of small importance. Practically no bulk sales have been made. Seed grain and live stock have been offered through the clubs, but these are largely individual or small lots. There is a great field for development here on the part of the clubs. If the members of the different clubs can decide that one variety of grain or potatoes, or one breed of dairy cattle, beef cattle, sheep, swine or horses is as profitable as a mixture, then a club or group of clubs will become noted for the quantity and quality of production in that particular line, and the wholesale dealer can feel safe in ordering from that club direct.

In a number of localities removed from a meat shop beef rings have been successfully operated by the members, thus providing a supply of fresh meat during the warm weather.

The strength of the co-operative

movement on the part of a club secured for the farmers in Northern Ontario the favourable consideration by the railway officials of an application for a station.

The financial side of rural life does not receive the entire attention of the clubs. The improvement of the social life and standing of the community receives its just amount of consideration. Facilities for home and community amusements are considered a requisite to successful agriculture in providing recreation for the young people. Concerts and banquets have been held, libraries, reading rooms and, in some districts, skating rinks have been provided.

The club organization is far reaching in its work but is only in its infancy. The value of the local organization is most forcefully illustrated in the history of the Women's Institute of the province of Ontario. This organization, with its 850 branches and a membership of

over 25,000, now reaches practically every section of the province. The success attending the efforts of the Women's Institute is largely due to the fact that the women of the localities concerned have been required to form *local organizations* and to do a considerable amount of work through local efforts, and by the use of local talent, before they are given assistance financially and by way of furnishing instructors and lecturers from time to time. The most effective way to instruct is to point out to the people where and how they may get information upon the subjects of vital interest to them and require that they make some effort on their own account before assistance is given. There is evidence that the farmers are beginning to take to heart the demonstration so effectively made through the Women's Institute, that we must have a local organization if the greatest good is to be done to the greatest number.

SASKATCHEWAN

BY W. W. THOMSON, B.S.A., DIRECTOR, CO-OPERATIVE ORGANIZATION

IN Saskatchewan the farmers' club, as it exists in Ontario and in the Maritime provinces, is unknown. In 1911 an attempt was made by the Extension department of the Saskatchewan University to arouse interest in the farmers' club movement. A bulletin, setting forth the advantages to be derived through these institutions and outlining a simple form of organization, was prepared and circulated, but owing to the fact that there was already another type of farmers' organization in the field, performing many of the educational and social functions which the clubs were intended to fulfil, little interest was manifested by the agricultural community and no clubs were organized.

The organizations already in the field were the local branches of the

Saskatchewan Grain Growers' association, and as these are in many respects carrying on work identical to that undertaken by the farmers' clubs in the East, a short account of the origin and development of these organizations is given herewith.

The Saskatchewan Grain Growers' association came into existence in 1901 as a result of the unfavourable conditions under which the farmers of the West were then compelled to market their grain. The Hon. W. R. Motherwell, now Minister of Agriculture for Saskatchewan, and Peter Dayman of Abernethy, called a number of farmers from Abernethy, Wolseley, Sintaluta, Qu'Appelle and other points to meet at Indian Head to discuss the situation and formulate plans for the establishment of a farmers' organization which would

press for the betterment of marketing conditions and work to secure just legislation on all matters affecting the agricultural community. At that meeting, held in December, 1901, it was decided that local organizations should be established throughout the country and that these should send delegates to a convention where a central executive, representing the whole, should be elected.

A campaign to organize local associations throughout the country was undertaken at once with the result that 38 associations were in existence when the first Grain Growers' convention was held at Indian Head in February, 1902. At this convention the organization was put on a permanent basis and from that time to the present the association has been a power in the land. An account of its achievements in securing improved grain marketing facilities and in originating progressive legislation on matters affecting agriculture, while out of place in this article, would show that the West owes much to the Saskatchewan Grain Growers' association. Suffice it to say that the objects of its founders have been largely realized and so popular has the organization become that there are few rural communities in Saskatchewan where a local branch of the association has not been established. The last annual report of the association shows that there are upwards of 800 local branches in the province with a total membership of 21,019 persons.

It is these local grain growers' associations that in Saskatchewan take the place of the farmers' clubs of the East. Usually a local will serve a territory identical to the local school district and the meetings of the association will be held in the school house, but occasionally three or four school districts will be united in one grain growers' association. The membership in the locals ranges from the five members, required to organize, up to two hundred or more. Each local has a president,

vice-president, a secretary and a board of directors, who together constitute an executive. Meetings are held once or twice each month at which matters of local and provincial interest are discussed and each organization engages in such other activities as appeal to its members. Of late years women have been admitted as members and many new lines of educational and social work have been taken up.

In regard to the relation of these organizations to the agricultural societies and the provincial department of agriculture, it might be explained that in districts where no agricultural society has been organized the college and the department will work through the local grain growers' association in carrying on extension work if its officers so desire. Institute speakers will be supplied to discuss agricultural topics at meetings arranged by the local, or, if the local takes up such lines of agricultural society work as standing field crop competitions or seed grain fairs, judges will be supplied free and federal grants can be earned on the same basis as if the competition or fair had been held under the auspices of an agricultural society. A maximum grant of \$200 may be earned for a standing field crop competition or \$50 for a seed grain fair.

Many activities of a social nature are also carried on by the local grain growers' associations. In the winter, concerts, entertainments and other gatherings of a social nature are arranged at frequent intervals, and practically every local holds a picnic during the summer. These gatherings afford a much needed opportunity for the people to mix together and become acquainted and add greatly to the interest of farm life throughout the year. Ministering, as they do, to the material, moral, intellectual and social welfare of the community, the local grain growers' associations fulfil very important functions and occupy a high position in the esteem of the western farmer.

PRINCE EDWARD ISLAND

SEED FAIRS

FIVE seed fairs were held in Prince Edward Island this spring. The Southern Seed Fair at Murray River, February 24th; the Eastern King's Seed Fair at Souris, February 26th; the Provincial Seed Fair at Summerside, March 3rd to 5th; the King's County Seed Fair at Georgetown, March 9th; the Central Seed Fair at Charlottetown, March 10th to 12th. They were all well patronized. The number of exhibits was larger than usual and the quality far surpassed previous years.

Agricultural Conferences were held in connection with the Seed Fairs and were very largely attended, from 300 to 800 being present at each meeting. The only new feature in connection with the fairs was the auction sale of seed grain held at Summerside. All the prize winning wheat, oats, barley, potatoes, and timothy seed was sold by public auction. Three hundred bushels of grain were disposed of in this way. The highest price paid for wheat was \$2.25 a bushel, and \$1.25 per bushel for oats.

HORSE BREEDERS' ASSOCIATION

The annual meeting of the Horse Breeders' Association of Prince Edward Island was held in Charlottetown, on Thursday, March 18th.

The financial statement of the previous year showed a balance on hand of \$230.00.

The officers for the ensuing year are as follows:—

President, W. W. Crosby, Cornwall; vice-president for King's County, H. H. Acorn, Souris; vice-president for Prince County, Jabez Lea, Victoria.

Directors, David Reid, Victoria Cross, J. Stanley Wedlock, Charlottetown, Robert Baker, North Bedeque.

HORSE SHOW

The Prince Edward Island Horse Show was held in Charlottetown on Wednesday, March 17th.

The total number of entries was 110 as compared with 53 in the previous year, and the amount paid

out in prizes was \$488 as compared with \$197 in the year 1914.

The attendance of spectators was very large and the awards were placed by Professor W. J. Reid, assisted by Professor W. R. Reek.

The Right Honourable Lewis Harcourt, Secretary of State for the Colonies, in acknowledging a copy of *The Agricultural War Book* sent him by Honourable Mr. Burrell writes:

"I am extremely obliged to you for the copy you have sent me of the most interesting *Agricultural War Book*. It is admirable in every way and ought to produce a very considerable effect throughout Canada."

NOVA SCOTIA

AGRICULTURAL LEGISLATION

TO facilitate and encourage the extension of the co-operative movement in Nova Scotia, Acts were passed by the Legislature, at its recent session, making provision for the incorporation of agricultural societies and county farmers associations under the "Farmers Co-operative Societies Act 1914." This 1914 Act provided for the incorporation of bodies of farmers without fee for the purpose of purchasing commodities, ordinarily used on the farm, and of selling farm products. The legislation of 1915 makes it possible for the members of the agricultural societies, of which there are some 230, and of the county farmers associations, of which there are 12, to become incorporated and to buy and sell co-operatively under this 1914 Act. The idea is that the agricultural societies shall constitute the small local units and the county associations the larger central units for each county. When the movement has reached to the extent of county organization, it is planned that a still larger organization, possibly an extension of the present United Fruit Companies, shall form the large central unit. If this scheme materializes, the possibilities of affecting a saving to farmers in the purchase of feeds, seeds, fertilizers, etc., to say nothing of advantageous marketing of farm products, will be enormous.

Bill No. 105 "An Act To Encourage The Growing of Wheat and Other Cereals" gives the Governor-in-Council power to expend a sum not exceeding \$10,000 in such manner as may be deemed expedient for the purposes of the bill. Under the provisions of this bill the Department of Agriculture has already secured a quantity

of seed wheat which is being sold at cost in those sections of the province where wheat growing has not been carried on for many years but where, owing to present conditions, the farmers were desirous of producing enough flour for their own use. It is further contemplated to assist in the erection of at least two modern flour mills, one in the fruit section at the western end of the province, and one in Cape Breton at the Eastern end of the province, these being parts of the country where the farmers have no facilities for getting their wheat ground.

Bill No. 51, an amendment to "The Injurious Insect Pest and Plant Disease Act of 1911" provides for the collection of fees to meet the cost of inspection and fumigation of nursery stock shipped into Nova Scotia. This measure applies to shipments from the various provinces of the Dominion as well as from foreign countries. The fees prescribed are practically the same as those now in force in British Columbia.

Bill No. 99, an amendment to "The Act for the Encouragement of Settlement on Farm Lands 1912", provides for the deferment of payments due on moneys advanced under the provision of the 1912 Act for the first five years on recommendation of the mortgaging company. Under the 1912 Act provisions were made by which the Government and a "loan company" could agree to advance to a farmer on his farm lands and buildings an amount not exceeding 80 per cent of the value of such farm land and buildings as appraised by such a loan company. Up to Sept. 30th, 1914, \$83,000 had been advanced to new settlers as well as old settlers. A new settler was

bound to have some difficulty in paying interest charges for the first few years until such time as his farm had become sufficiently productive. The judicious deferment of interest and other payments for the first year or two will give the new settler a much better chance than he would have if compelled to make full payment for the first year of his settlement.

APPROPRIATIONS FOR AGRICULTURE, 1915

The appropriations for the year are as follows:—

Agricultural College and Farm	\$33,000
For general purposes subject to provisions of the Revised Statutes and amending Acts	34,750

Agricultural Societies	15,000
Total	\$82,750

CAPITAL APPROPRIATIONS

Agricultural College	7,500
Grand total	\$90,250

In addition the Governor-in-Council may borrow a sum not exceeding \$120,000 for Science Building at Agricultural College. The interest on this amount is to be paid from the Federal appropriation for the aid of agriculture. Besides the Governor-in-Council may appropriate a sum not exceeding \$10,000 to encourage the growing of wheat and other cereals.

QUEBEC

THE LATE MR. G. A. GIGAULT

BY H. NAGANT, EDITOR LE JOURNAL D'AGRICULTURE

IT is with the deepest regret that we learn of the death of Mr. G. A. Gigault, Deputy Minister of Agriculture for the province of Quebec, which came almost suddenly on the 25th of April. Mr. Gigault was an apostle of agriculture. His departure is a great loss for the province and particularly for the agricultural community whose prosperity had always been the object of his work and of his thought.

Mr. Gigault was 70 years of age. Born at St. Mathias, Rouville county, he studied at the seminary of St. Hyacinthe and was received as a notary in 1867.

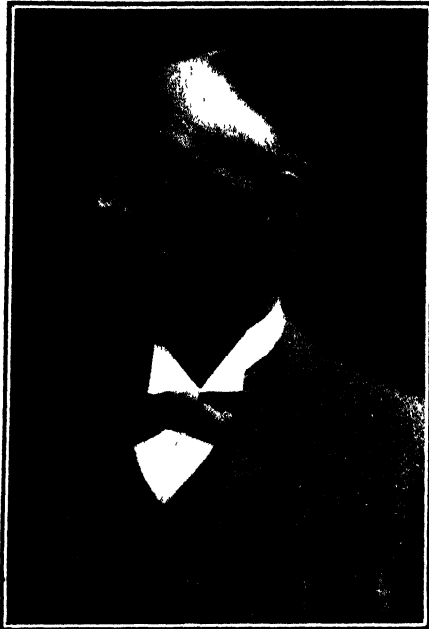
He represented his native county (Rouville) in the Dominion Parliament from 1878 to 1891. It was at his request that a special committee of the House of Commons was formed in 1884 to enquire as to the best means to adopt to encourage and develop the agricultural industry which was then in a depressed condition. As an active member of this

committee, Mr. Gigault displayed during two years, great activity in the study of the question which he had so much at heart. It was on the report of this committee, which was made in 1886, that a bill was introduced into Parliament by the Minister of Agriculture, the Honourable John Carling, providing for the establishment of a central experimental farm and four branch farms, which was the beginning of the present extensive system of experimental farms and stations.

Appointed Deputy Minister of Agriculture for the province of Quebec in 1892, Mr. Gigault worked ceaselessly for twenty-three years for the improvement of agricultural industries.

He organized the agricultural societies in order to make their work more efficient. He took special interest in the agricultural clubs and it was at his suggestion that the first agricultural co-operative societies in Quebec were established.

Mr. Gigault was recognized as an authority in matters of agricultural



THE LATE MR. G. A. GIGAULT

organization and legislation; his opinions always carried much weight and were appreciated by officials of the United States, who frequently invited him to discuss the methods, progress and successes of the systems with which he was associated.

If it has been justly said that "he who makes two blades of grass grow where only one grew before is a public benefactor", with what feeling of gratitude must we appreciate the work of this man, who, during his whole life-time, by deed and by speech, led an agricultural campaign with an energy and an earnestness that no difficulty could ever abate or discourage, and to whom our provincial agriculture owes the greater part of the progress made during the last thirty years.

A devout Catholic, an upright man, scrupulously honest, of a great nobleness of character, this worthy man whose motto always was "duty first" enjoys now a well-earned rest.

REPORT ON SEED IMPROVEMENT

THE report for 1914 of the Canadian Seed Growers' Association on seed improvement in the province of Quebec indicates continual progress. It deals in large measure with the Quebec Seed Growers' Co-operative Agricultural Association, which was formed last December to continue the task commenced four years ago, when the Quebec Department of Agriculture offered a special grant for the encouragement of the production of high-class seed grain. In that year, or in 1911, the number of societies which qualified for the grant, amounting to \$75 in each case, was 54. Last year it was 64. The province also distributed prizes, paying one-third of the amount involved itself and receiving two-thirds from the federal government. In 1911

the sum so distributed in prizes was \$1,739. In 1914 it was \$4,892.

A provincial exhibition is also held every year. This, too, shows rapid development, the entries in 1911 being 275 and, for 1915, 540, calling for the distribution of prizes to the amount of \$828. In addition, local exhibitions are held by agricultural societies. These have also made consistent advancement, the number of exhibitions in 1911 being 7 with \$350 in prizes, and, in 1914, 23 with \$1,678 in awards. Special competitions are held as well, one being between farmers who have obtained prizes in the preceding year for standing crops of seed grain, and another for registered and specially selected seed, open only to members of the Quebec Seed Growers' Co-operative Agricultural Association.

The headquarters of the provincial association are at Ste. Rosalie, in Bagot County, where there is a good grain elevator situated at a junction where the Canadian Pacific, Grand Trunk and Intercolonial railways all cross each other. It is expected that there will be the fullest co-operation between the Canadian Seed Growers' Association generally and the new organization, which has already a capital of \$14,000. Shares are \$10 each, payable in yearly instalments of one dollar. It is anticipated that the present subscribed capital will be doubled in short order. Already a large quantity of registered seed has been purchased and distributed to members. So promising

are the prospects that provisions have even now been formulated on which a dividend not exceeding 6 per cent may be paid.

Experts will visit the fields during the summer on which choice seed is being raised to see that conditions are favourable. Modern machinery for the cleaning and selection of seed has been installed in the elevator and two clover hullers for demonstration purposes have been in operation under the direct auspices of the provincial Minister of Agriculture for the past four years. Many small co-operative societies also own cleaners and hullers. The total result has been the offering for sale of thousands of pounds of good clover seed.

ONTARIO

LEGISLATION AT LAST LEGISLATIVE SESSION

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

THE 1915 session of the Ontario Legislature was one of the shortest on record and its business was confined very largely to matters rendered necessary on account of the war, and other matters of urgency.

AGRICULTURAL LEGISLATION

There was practically no legislation on agricultural subjects. One change which required an amendment to the Act was in reference to the administration of the district representative work. When this plan was adopted several years ago, it was decided that the appointments should be made and salaries paid under the Department of Education, while the Department of Agriculture took responsibility for the outside work aside from the school instruction and paid the expenses in connection therewith. The outside work having developed to be the chief work of the district representatives, it was decided that they should

be entirely under the Department of Agriculture, and this change will take effect on the first of the next fiscal year, which is November 1st. The change is one of administration only and will make little or no difference in the actual work of the men in the field, who will continue to devote as much interest to school fairs, courses in agriculture, as well as many other activities, as in the past. It will mean that the Department of Education will put into operation another plan for the encouragement of the teaching of agriculture in high and continuation schools and this is now under consideration.

AGRICULTURAL APPROPRIATIONS

Provision has been made for the carrying on of the work of the Department in the usual way, as the following statement of appropriations (including capital account) for the year ending October 31st, 1915, will show:—

Civil Government, Printing Reports and Bulletins, Statistics,	
Miscellaneous	69,775.00
Agricultural College	350,893.29
Agricultural and Horticultural Societies' Branch	163,700.00
Live Stock Branch	57,325.00
Institutes' Branch	41,000.00
Dairy Branch	64,150.00
Fruit Branch	62,025.00
Colonization and Immigration	137,125.00
Ontario Veterinary College	68,095.30
District Representatives	40,600.00
Demonstration Farm	10,000.00
*Director of Elementary Agricultural Education	2,600.00
*Instruction in Agriculture and Horticulture and Grants to School Gardens in Public and Separate Schools and contingencies	4,500.00
*Instruction in Industrial Arts and Household Science, grants and contingencies	2,000.00
*Travelling expenses of Normal School students to Rural Public Schools and for Nature Study	1,200.00
*School Gardens for Normal Schools	1,000.00
*Agricultural Training in High Schools by the District Representatives	43,200.00
*Special Industrial and Agricultural Education	5,000.00
Total	\$1,124,188.59

*Granted by the Department of Education.

The main difference between the above appropriations and those for last year is due to the completion of important buildings which were under construction a year ago and the consequent elimination of the appropriations therefor. These consisted of the new dining hall at the Ontario Agricultural College, which has been in operation for the past season, and the new Ontario Veterinary College, which has already been described in THE GAZETTE.

Although the appropriations for colonization and immigration remain the same, this work has naturally been very materially affected by the outbreak of hostilities and no efforts are being made to bring farm labourers or investors from Great Britain or Ireland. Instead, the Colonization Branch has been sending a representative to the cities and larger towns of the province with a view to selecting from among the unemployed, those who are most suitable for farm work.

Of the appropriation for agricultural societies \$75,000 is required for grants. In view of the financial conditions prevailing at the outbreak of the war, it looked as though the Government might have to econo-

mize in this regard, but it is now definitely stated that these grants will be paid in full.

AGRICULTURAL POLICIES

The main discussion on agricultural matters during the session came up on a motion submitted by the Opposition. It was moved by Mr. Thomas Marshall, Member for Lincoln, and read as follows:—

"That in view of the serious decline in our rural populations, accompanied by a marked falling off in food production in the face of Ontario's unsurpassed agricultural possibilities and millions of acres of unoccupied agricultural land, this House is of the opinion that a great advance in the agricultural policy of the Government is one of the most urgent and vital needs of Ontario to-day, such policy to include:— (1) Making more available to rural communities the scientific and technical knowledge taught in our agricultural college by the establishment of agricultural schools and demonstration farms throughout the province; (2) The inauguration of an effective system of rural credits; (3) The development of co-operative effort in buying and selling; (4) Financial assistance by way of loans at a low rate of interest, on the security of land and improvements, to assist desirable settlers in establishing themselves in the newer parts of the province, and to enable farmers in the older parts of the province to improve and increase the productivity of their lands."

The mover of the motion was replied to by the Minister of Agriculture, Honourable James S. Duff, who, in addition to reviewing the general work of the Department, dealt specially with the suggestions advanced in the motion. In reference to further agricultural schools he pointed out that this had always been the policy of the late Sir James Whitney, but could only be acted upon when there was a sentiment which would support such schools in the rural districts. This sentiment was being created by the work of the district representatives, and if in the future it was found that agricultural schools were justifiable, it would be because of the preliminary work by these representatives. As for demonstration farms, he submitted that the policy which had been carried on by the Department was more suitable to the needs of Ontario and more effective as an educational method. As for co-operation, he pointed out that a Branch of the Department had been organized to devote itself entirely to this work and had been doing so for the past year. In regard to rural credits and general financial assistance, he stated that the department had been studying the subject and had collected a great deal of information with reference to it, but no decision had been arrived at as yet.

The Government amendment which was substituted for the motion read as follows:—

'This House recognizes the soundness and stability of Ontario Agriculture as emphasized by the recent industrial and financial crisis through which the province, in common with the rest of the world, has passed, and this House notes with satisfaction the improved conditions of the agricultural industry as illustrated among other things by higher standards and increased returns per acre, and this House desires to place on record its appreciation of the encouragement of agricultural instruction in schools; the appointment of District Representatives; the holding of short courses and Rural School fairs; the giving of farm demonstrations, and the encouragement to co-operative organization and effort, and this House commends

the well-defined policy of the Government to continue this work and to take such other steps as may be necessary, and to aid the development of the newer districts by the construction of roads; the carrying on of experimental work in farming; the advancing of seed to settlers and every other practical method.'

GOOD ROADS LEGISLATION

Good roads are a matter of first importance to the farmers, and consequently it may be noted here that two very important bills looking to the improvement of the highways of the province were introduced and passed, being in charge of the Honourable F. G. Macdormid, the new Minister of Public Works, under whose department the administration of this matter comes. One was an amendment to the Highway Improvement Act, under which most of the highway improvement has been done during the past twelve years or more. This amendment increased the amount of aid from the province from one-third as in the past to 40 per cent. It also made the members of county councils personally liable for seeing that all money raised by an issue of debentures for road construction should be used for this purpose and no other.

The other bill was cited as the Ontario Highway Act, and follows up the recommendations of the Highway Commission which was appointed over a year ago. It contains many important provisions, one of the most important being that the province will contribute a sum equal to 20 per cent of moneys expended by a county upon the maintenance and repair of roads under the Highways Improvement Act. It also provides that the province will contribute up to \$150 for the salary of a road overseer or foreman appointed by any township municipality. Provision is also made whereby suburban roads leading into cities of over 10,000 may be constructed under a commission and the cost borne on a ratio of 30 per cent by the county, 30 per cent by the city or town and 40

per cent by the province, providing that the amount contributed by the province shall not exceed \$4,000 per mile.

Similarly, provision is made for the construction of any road which is designated by the Lieutenant Governor-in-Council as a main road and which shall be constructed by a board of trustees of not more than five members. Provincial aid to such a road is on the same basis as

urban roads. Power is also given to the Lieutenant Governor-in-Council to prohibit or regulate the erection of sign boards and fix a license fee for the same. It is not expected that this Act will become effective this year unless in exceptional cases, where the county council at their June sessions are prepared to proceed. The Act or any portion of it may be brought into force by a proclamation by the Lieutenant Governor-in-Council.

NEW ONTARIO DEMONSTRATION FARM

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

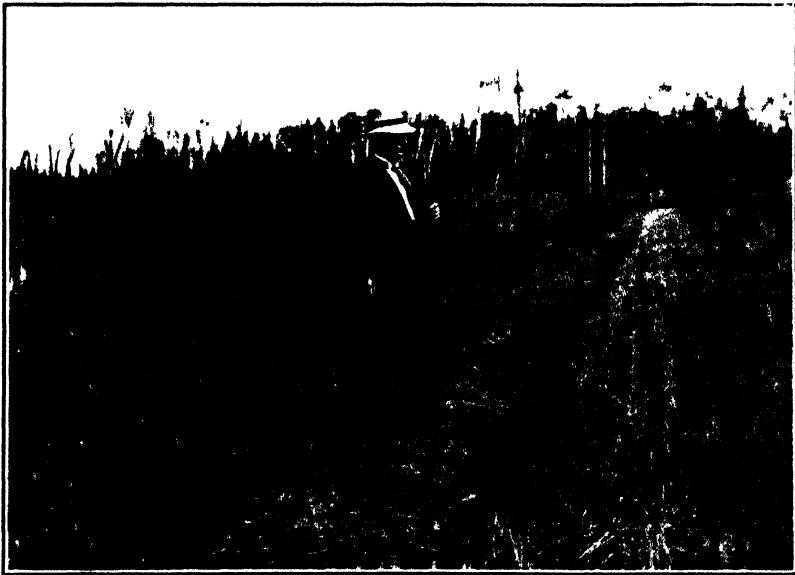
IN the great clay belt of the North Country, 105 miles north of New Liskeard and 32 miles south of Cochrane, is situated the Demonstration Farm of New Ontario at Monteith. The farm includes 850 acres of land, in the townships of Clerque and Walker, 750 of which are heavily timbered mainly with spruce, fir, tamarac and white wood; 35 acres are cleared and used for pasture, and the remaining 65 acres are cleared and have been under cultivation for from one to four years. The farm and surrounding country are of a rolling nature, permitting good surface drainage. The soil is a very heavy dark clay, characteristic of the clay belt in the north and while difficult to work, responds readily to careful treatment. Fortunately land newly broken in the north has a liberal supply of decayed vegetable matter which assists very materially in improving the texture of the clay soil.

The Monteith Farm was established five years ago. At that time, it consisted of virgin forest and the first and second years were devoted mainly to lumbering and breaking up the new land, very little attention being given to agriculture. Since that time, however, the reverse has been the case, and every effort has

been toward developing the land under cultivation. The forest is cleared and new land broken, only when it does not interfere with the regular farm operations. The buildings at the present time are not extensive, but are quite sufficient for the present requirements, and will be added to as necessity demands. They comprise a modern dwelling for the superintendent, two small houses for hired men, a 60 x 40 cattle stable, a 25 x 30 horse stable, a modern poultry house and other out-buildings. The live stock kept includes Clydesdale horses, milking Shorthorn cattle, Shropshire sheep, Yorkshire swine and New Ontario hens. These breeds were selected because it was felt that they were best suited to New Ontario conditions. Every effort is being made to induce the settlers to improve their live stock and to encourage them to stick to utility breeds. For example, the Clydesdale stallion kept at the farm is travelled through the settled section of the district and a nominal fee of \$5.00 is charged for service. Last year over 18 mares were bred and the prospects are that double this number will be bred in 1915. This will naturally have a very desirable effect upon the horses in that section of the country. Similarly, bulls, rams and boars are

placed at the disposal of farmers free-of-charge, provided they organize themselves into Live Stock Improvement Associations and undertake to feed and care for the animals supplied. Where animals are sold to bona fide settlers for breeding purposes the price charged is very little in advance of the value of grade animals—for example, during the past year, sow pigs out of well bred sows sired by an imported boar were sold for \$4.00 each, at six weeks of age to settlers signing an

to yield and other desirable characteristics. In this way the desirable varieties are recommended to the farmers. Among the crops that have proven to be adaptable to northern conditions are the marquis wheat, O.A.C. 72 oats, and O.A.C. 21 barley. The O.A.C. 72 oats have demonstrated their value from the fact that the crop produced at Monteith last year averaged 70 bushels per acre and of first class quality. It is intended that the function of the farm shall be not only to demonstrate



HON. J. S. DUFF, MINISTER OF AGRICULTURE FOR ONTARIO, STANDING IN FIELD OF FALL WHEAT ON THE MONTEITH FARM, JULY, 1914

agreement to use the animals for breeding purposes.

In the same way, an effort is being made in regard to field crops, but, until such time as the country has become more settled and opened up, only the hardier classes of crops can be grown. These include wheat, fall and spring, barley, oats, peas, clovers, grasses, potatoes, turnips and mangels in the main. Five or six of the standard varieties of the crops mentioned above are being grown under the same conditions of soil and cultivation, and careful records kept as

the value of one variety as against another but also to become a source of supply of good seed for the settlers at reasonable prices. As an example of what is being done in this respect, it might be mentioned that O.A.C. 72 oats are being sold to bona fide settlers for seeding purposes at 75 cents per bushel. While the extent of this feature of the work is somewhat limited at the present time, the demand for good seed is so great as to warrant the extension of this important function of the farm from year to year.

As might naturally be supposed, the tenacious nature of the soil makes drainage an important factor. The rolling nature of the land, which facilitates surface drainage, overcomes this difficulty to some extent, but there is no doubt that under-drainage will have a desirable effect upon the physical texture of the soil and the length of the growing season. However, it is not thought wise to advocate drainage extensively to the settlers, until such a time as it has been thoroughly demonstrated that the increase in yields warrants the expenditure. With this in mind a traction ditcher and cement tile machine were purchased last year for the farm and some 30 acres under-drained. These drains were put in, in such a way as to facilitate the growing of crops on drained and undrained land where other conditions are practically equal. The result of this work will no doubt prove very interesting and will be watched closely by the farmers visiting the farm each year. Similarly, methods of cultivation are receiving attention and experiments are being conducted along these lines.

One among many might be mentioned: fall versus spring ploughing. As might be supposed, the clay soils are greatly benefited by fall ploughing and this has been clearly demonstrated at the Monteith farm.

The clearing of land and bringing it under cultivation is one of the large problems to be faced by the settler in New Ontario. Methods of chopping, burning and stumping are worthy of close study, as is the class of crops best suited to the newly broken soil. In this connection, blocks of timbered land are being measured and each block cleared by a different method. An accurate account is kept of the labour employed, so that definite information may be secured as to the cost of

clearing and the most efficient methods recommended. It might be well to add that a farm-accounting system has been adopted and records are being kept of all farming operations. In order that the various lines of work may be conducted in an efficient manner and studied from a practical and scientific standpoint, a graduate of the Ontario Agricultural College has been appointed manager of the farm. Mr. R. H. Clemens, the farm superintendent, is always ready to advise settlers and to attend agricultural meetings of various kinds throughout the district.

Each summer for the past two years, a farmers' picnic or short course has been held at the farm, in order that farmers might have an opportunity of seeing for themselves the work which was being carried on, and have brought to them the best information available that would assist them in dealing with their own problems. The Timiskaming and Northern Ontario Railway co-operated by giving very cheap excursion rates, and over 1,500 people were present on each occasion from sections between New Liskeard and Cochrane. Addresses were delivered by several prominent men, and also by experts from the Ontario Agricultural College, who had come up for that special purpose. Those present showed the very keenest interest in all the information given, and each of the experts, particularly the farm superintendent, was kept busy replying to questions which showed at once the intelligence and enterprise of the farmers as well as their appreciation of the information given. This picnic is now recognized as an annual event and farmers have come to look forward to visiting the farm as the farmers of Old Ontario have to visiting the college at Guelph from year to year.

POTATO WAR PLOTS FOR RURAL SCHOOL CHILDREN

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THOSE who have been reading the columns of *THE GAZETTE* are no doubt familiar with the rural school fair movement in Ontario and its tremendous growth during the past few years.

This year, plans are being made by the Ontario Department of Agriculture, through the district representatives in the various counties, to conduct over 235 school fairs which will represent in the neighbourhood of 2,300 schools, about one-half the number of rural schools in the province. This will mean that over 45,000 school children, in the rural districts of Ontario, have been supplied with pure seed of various kinds and have been given instruction in methods of planting, cultivation, etc. It must be admitted by all that the school fair affords an excellent opportunity of introducing desirable varieties of farm crops and, in addition, is a practical method of interesting the boys and girls in better agriculture.

For the year 1915, when our Empire is engaged in a struggle for liberty, it was felt that the rural school children would welcome some practical suggestions as to how they might do their part in assisting in this great cause. With this in mind, it has been suggested to the children

taking part in rural school fairs in Ontario, that as many as can should grow plots of potatoes, the crop to be sold, and the funds thus realized to be devoted to some patriotic cause. This idea has met with most encouraging response on the part of the children, and from present indications, the proceeds from the potato war plot will run into thousands of dollars. These plots are each to be $1/80$ of an acre in area; the seed is being supplied by the Department of Agriculture in order that only the standard varieties of potatoes shall be used for this purpose. The plots will be inspected by the district representatives, as are all plots grown by children for school fairs, and prizes will be given for the best kept plots, also for the best "war plot" potatoes exhibited at the school fairs.

Plans for the disposal of the potatoes have not as yet been finally decided upon. In a general way, however, it may be said that the potatoes will be shipped, as early in the fall as is practicable to a number of the larger centres, such as Toronto, Ottawa, Hamilton, London, and sold direct to the consumer. The funds thus realized will be handed over to some patriotic organization as a gift from the rural school children of Ontario.

INCREASED PRODUCTION OF SOME OF THE BEST VARIETIES OF FARM CROPS

BY PROF. C. A. ZAVITZ, ONTARIO AGRICULTURAL COLLEGE

THE market values of oats, barley, and winter wheat grown in Ontario during the past sixteen years amount to upwards of one hundred million dollars over those of the previous sixteen years, owing simply to the increases in yields of these grains per acre.

We are, however, only beginning to realize the possibilities of increased crop production in Ontario. I believe that the next few years will show greater progress than ever before along this line. With rather a severe four years' rotation and with ordinary manuring we have produced crops at

the College which in the average of a number of years fully double the yields produced throughout the province. This increase has been brought about largely by the use of the best varieties, the careful selection of seed, the proper cultivation of the soil, and seeding at the right time. Many farmers do not yet realize the great importance of sowing seed of high perfection. The Ontario Agricultural College at Guelph has been furnishing to the farmers of Ontario, and other colleges and experiment stations in Canada have been furnishing to the farmers of the different provinces, choice seeds of some of the best varieties of farm crops. Small quantities of really good seed can be increased rapidly to large amounts. In order to emphasize this point permit me to give a few illustrations.

In the spring of 1903 the writer selected a choice plant of oats. The product of the one seed was carefully planted in the spring of 1904, and the crop of that year was sown with the grain drill in 1905, in which year slightly over one hundred bushels of oats were obtained as the direct result of one seed in the third season.

The first year we distributed the O. A. C. No. 21 barley in the co-operative experiments, a farmer in Huron county sowed one pound of this variety on a plot one rod wide by two rods long in comparison with three other varieties. The O.A.C. No. 21 variety gave the best results, and the grain obtained from this little plot was sown in the spring of the following year. This variety again gave satisfactory results, and all of the good seed obtained was sown in the following spring and upwards of nine hundred bushels of the O. A. C. No. 21 barley were produced in the third year as the direct result from one pound of seed which was sown in the experiment. This was practically all sold by the grower for \$1.50 per bushel.

The seed of the O. A. C. No. 72 oats was first distributed in the spring of 1911 when one pound was sent to each of three hundred Ontario farmers, along with one pound of each of two other varieties. In York county a farmer and his son each received the experimental material and conducted separate tests in that year. The O. A. C. No. 72 variety gave excellent results in both tests, and the following spring the father transferred to the son the crop of O. A. C. No. 72 oats which he obtained from the one pound sample received from the College. The son, therefore, had the product of two pounds of oats to sow in the spring of 1912, and obtained slightly over ninety bushels. He sold three bushels of these for \$25, sowed the rest in the spring of 1913, and secured from that season's crop over 3,400 bushels of oats of the O. A. C. No. 72 variety. These were nearly all sold at from \$2.25 to \$2.50 per bushel.

It will be seen that the grain crops increase rapidly if the very best varieties are used and careful methods of production are followed. Although the O. A. C. No. 21 barley was not distributed until 1906 it is probably the most extensively grown barley in Ontario at the present time. The O. A. C. No. 72 variety of oats was not distributed until 1911, and many thousands of bushels were grown in 1914. The variety is increasing rapidly.

Every farmer in Canada should endeavour to grow the best varieties of farm crops on his own particular farm. If he is not now growing the most suitable kinds, he should endeavour to secure them as soon as possible from the agricultural college or the experimental station of his own province. Increased production and high quality as they apply to crop production are important for both the producer and the consumer. May each Canadian farmer do his best.

SHORT COURSES ANNOUNCED

THE following short courses are announced by President Creelman to be held at the Ontario Agricultural College:—

(1) Commencing July 5th and lasting five weeks, there will be a course in agriculture for the school teachers of the province.

(2) From July 26th to August 7th, all the Public School inspectors will assemble for a two weeks' course in agriculture and for a conference and discussion of their business.

(3) A new course of two weeks from July 26th to August 7th called "School for Rural Leadership" will be held, to which all ministers will be

invited. The executive bodies of the different religious denominations are also arranging to have special representatives present to discuss some phases of the work.

The men's residence is to be open at that time and students of all ages will be made comfortable. These two weeks promise to be an enjoyable period and should result in the improvement of social life in the country. It is to be in no sense a course in theology, but has been arranged solely with the idea of fitting leaders throughout the country to be able to talk to their constituents in terms of their daily life.

NOTES FROM DISTRICT REPRESENTATIVES

That the work of the district representatives of the Ontario Department of Agriculture is meeting with approbation is evidenced by the uses they are making of the offices. For instance, in the county of Hastings the office record shows that from November 1st to April 14th, there have been 486 personal calls, and 119 telephone calls, to discuss some agricultural topic or secure information on some important subject. Of late many have come in to get particulars on the treatment of grain and potatoes for smut, and to secure inoculation for clovers; also to get particulars re *spraying and pruning* of orchards.

A *Banner Oats Association* has recently been formed with the hope of producing car-load lots of seed oats of this highly recommended variety, and also a *Horse Breeders' Club* has been formed under the rules and regulations laid down by the Live Stock Branch at Ottawa in the hope of obtaining Federal assistance which is being granted for the improvement of heavy horses.—A. D. McIntosh, District Representative, Hastings Co.

Extract from report dated April 3rd from N. C. MacKay, B.S.A., district representative for Bruce county at Walkerton:

"On Saturday afternoon of the previous week we had a meeting of the live stock breeders of this part of the county and they organized themselves into the "Bruce County Stock Breeders' Club." Mr. Thos. Jasper, Carlsruhe, R.R., President; W. A. Tolton, Walkerton, R.R., Vice-President; and myself as Secretary. They also elected 10 directors scattered throughout the townships. It is the purpose to hold a pure bred stock sale in February or March of next year and the directors were all very enthusiastic regarding this. It is the purpose to have every animal inspected and nothing but A 1 stock included. At the time of entry every member has to submit pedigree, also make a deposit of \$10, this to be forfeited if animal is not presented on day of sale."

Extract from letter dated April 6 from P. Stewart, B.S.A., district representative for Kenora district at Kenora:

"Before the middle of next week I expect to distribute among the farmers of Oxdrift and Dryden 450 bushels of seed peas supplied on contract basis by W. P. Niles, Ltd., of Wellington. There has never been any seed peas grown in the district but I was able to convince the above firm of our possibilities and should the experiment prove successful it will be the beginning of a profitable industry, independent of local markets."

Extract from report dated April 3rd, from R. L. Vining, B.S.A., district representative for Wentworth county at Hamilton:

"Probably we hold the record for short course organization this spring. On Wednesday night, at the invitation of a crowd of fellows back of Stoney Creek, I attended their meeting and explained the agricultural short course—its object and plan. I am glad to inform you that they have already enrolled twenty-six fellows to attend the short course of 1916, which will be held at Stoney Creek. We held an election of officers, and a splendid executive of five members of the class will have charge of the recruiting during the summer. The whole thing was almost too easy, but it should make a rousing good short course next winter."

Extract from letter dated April 22nd, from J. Laughland, B.S.A., district representative for Simcoe county at Collingwood:

"I am mailing under separate cover copies of different issues of the Barrie Advance containing articles I have contributed on agricultural topics. The Advance people are always anxious to publish anything in connection with our work, and when I offered to write these articles, they were very anxious to get them. My idea in writing them was, in the first place to follow up what had been brought out at the agricultural conferences. I wanted to show some of the ways that production from the farm might be increased. In the

second place I felt that these articles would keep the work we are doing before the people of the county and help us in reaching people that we might otherwise not reach. I have already had communications from quite a number of farmers who have read these articles and wanted some further information along the lines that I had dealt with."

W. G. Nixon, B.S.A., district representative for the Temiskaming district at New Liskeard writes as follows:

"There is in many sections easily 50 per cent more land ready for cultivation. More fall ploughing was done last year than ever before. The provincial government is supplying the settlers with thousands of bushels of seed grain. Everywhere agricultural activity prevails and farmers are all expectant and anxious that the exceptional season experienced thus far shall continue. The anxiety felt by many is acting as a stimulus to spur them on to greater activity, in preparing their soil, getting their seed in, in a better condition and causing a sort of general awakening to the necessity of doing one's best. There can be no doubt but that there is a very great future before the agriculturists of the district who do their best and stay with the game."

TENT CATERPILLAR COMPETITION

Extract from report dated May 1st from J. C. Steckley, district representative for York county:

"We are going to have another serious outbreak of tent caterpillars this year and we are just planning a campaign against them now. I wrote articles concerning the pest to all the local papers in the county. Then we are going to arrange a series of spraying demonstrations throughout the country. We are also contemplating placarding the whole county, giving them the most successful method of eradicating.

"In town we have started a com-

petition for the boys, which is outlined briefly on the enclosed sheet. In this way we hope to get rid of a lot of the caterpillars which are on the wild trees in vacant lots and other places in the town."

COMPETITION

Open to boys under 16 years of age of the town of Newmarket.

The following cash prizes will be awarded to the boys collecting the largest number of tent caterpillar nests, 1st, \$5.00; 2nd, \$3.00; 3rd, \$2.00; 4th, \$1.00.

RULES

1. At least ten boys must enter the competition.

2. Caterpillar nests should be collected in the evening as most of the caterpillars are out during the day; nests in competition will not be counted unless they contain caterpillars.

3. Nests may be taken from trees either in town or country.

4. Competition opens May 1st, and closes May 22nd.

5. Nests of caterpillars must be brought to the department of agriculture the same day they are collected, between 7.30 and 8 o'clock at night, when they will be counted and destroyed.

MANITOBA

AGRICULTURAL LEGISLATION

AT the last session of the Manitoba legislature acts were passed enabling "Municipalities to Borrow Limited Amounts of Money for Seed Grain Purposes"; to make "Further Provisions for Dispensation of Seed grain"; "Respecting Grain Seed in Un-organized Districts of the Province"; "To Incorporate the Manitoba Bee-keepers' Association"; "Protecting Dairies, Creameries and Cheese Factories"; "To Amend the Horse Breeders' Act"; "To Amend the Game Protection Act"; "To Amend The Charity Aid Act."

The act enabling municipalities to borrow money for seed purposes provides that within six months of the passing of the Act any municipality so desiring can borrow a sum not exceeding \$30,000 for the purpose of lending the same to farmers for the purchase of seed grain. Debentures issued under the act must be for a term not exceeding five years and must not bear interest exceeding 6 per cent per

annum. The amount so borrowed is to be a separate account from all other transactions of the municipality. The bill respecting the dispensation of the seed arranged for supplying seed to the wives or representatives of owners of land who have volunteered for the war.

The Un-organized Districts Act provides that seed grain advanced to any single individual shall not exceed \$250 in value and establishes safeguards for the collection of payments.

The Beekeepers' Act authorizes the incorporation of a beekeepers' association, the subscription for membership of which is not to be less than one dollar per annum.

The act respecting dairies, etc., is divided into three parts, the first providing for the incorporation of creameries and cheese factories, the second, for the sale of milk and the manufacture of milk products, and the third describing the powers and limitations, rules and regulations of the Manitoba Dairy Association.

Schedules attached to the act give a list of 25 creameries and 17 cheese factories with the name of the secretary and his post-office address in each case.

GRANTS FOR AGRICULTURE AND IMMIGRATION

The Horse Breeders' Act is amended so as to come into force on proclamation of the Lieutenant Governor-in-Council. It is construed that this act came into operation on the 31st December, 1914.

The following estimates were passed for the Department of Agriculture and Immigration:

Salaries	\$14,700.00
Expenses	1,500.00
Agriculture and Statistics	75,350.00
Agricultural College	187,50 .00
Immigration	41,000.00
Grants	155,647.10
Seed Grain Loans	100,000.00
Miscellaneous	33,000.00
	\$608,697.10

The amount devoted to Agriculture and Statistics is thus distributed:

Electoral Division Agricultural Societies and Farmers' Institutes	\$52,000
Agricultural Statistics	3,000
Noxious Weeds Inspection	7,000
Superintendent of Agricultural Societies	2,300
Pure Bred Cattle Breeders' Association	700
Manitoba Sheep Breeders' Association	500
Manitoba Swine Breeders' Association	300
Manitoba Horse Breeders' Association	500
Manitoba Dairy Association	300
Aid to Poultry Association	1,000
Aid to Horticultural Societies	1,000
Brandon Winter Fair	750
Aid to Ploughing Matches	1,000
Agricultural and Arts' Association	5,000

The Agricultural College item is divided: salaries, \$86,000, maintenance \$66,500, fuel \$35,000. The amount set down under the head of "Grants" is all for general charitable purposes. The "Miscellaneous" item includes \$25,000 for game protection and \$6,000 for vital statistics registration. For printing and marriage license administration \$500 each is allotted and \$1,000 comes under the head of "Unforeseen".

TILE-DRAINING SUCCESSFUL AT AGRICULTURAL COLLEGE

DURING the past two years considerable work in tile-draining has been done at the Manitoba Agricultural College farm just south of the city, for the purpose of determining the extent to which it would be profitable for the farmers of the Red River Valley to tile-drain their farms. So far the results have been satisfactory. It has been interesting to note that for the two years since the tile has been laid some of the drains have begun to discharge in both years between March 15th and 17th, thus indicating that tile-drains will be a material aid in removing surplus water from the soil early in the spring.

On March 23rd of this year six out

of eight main drains were discharging. The rate of discharge from three was measured and the following results obtained: -

Main "A" was discharging .21 gallons per second, or 2,803 cubic feet in 24 hours.

Main "J" was discharging .34 gallons per second, or 4,690 cubic feet in 24 hours.

Main "E" was discharging .62 gallons per second, or 8,572 cubic feet in 24 hours.

If this water had not been removed, it would have caused the soil to become puddled, and caused it to remain cold and late. Poor drainage is one of the chief causes of the late seeding and low crop yields which often occur in certain localities in the Red River Valley.

DEMONSTRATION FARMS

ON a recent visit to the Demonstration farm at Killarney, Manitoba, Prof. S. A. Bedford, Deputy Minister of Agriculture of the province, superintended the boring of two wells—one for the house of the manager of the Demonstration farm and one for the barns. Mr. Bedford found that the farm had been well cleaned up and had been greatly improved by the work put on it last fall. A portion of the

farm, it is expected, will be in crop this spring. Hon. George Lawrence, Minister of Agriculture, has ordered a number of large and small fruit trees to be set out as a commencement and this stock will be added to from time to time. This valuable work is only one more instance of expansion which is made possible by the provisions of THE AGRICULTURAL INSTRUCTION ACT.

FIELD REPRESENTATIVES APPOINTED

THE following graduates of the Manitoba Agricultural College have been appointed field representatives of the Manitoba Government, their duties to commence forthwith: Lester V. Lohr, W. T. G. Wiener, H. F. Danielson, Nelson S. Smith, and W. J. Stone. Other representatives will be appointed as required and as suitable men become available.

To each of these field representatives a district is apportioned for the summer months. Mr. Lohr will have his headquarters at Neepawa; Mr. Wiener will make Morris the centre of his operations; Mr. Danielson will be located at Arborg; Mr. Smith at Killarney, and Mr. Stone at Dauphin. They will be available, however, for work in any part of the province if the extension department of the Agricultural College or

the Department of Agriculture require their services.

These field men have received instructions from the Hon. Minister of Agriculture to endeavour in every way to make themselves as useful as possible to the farmers of their several districts and to the agricultural population of the province generally. They will keep in close touch with all the demonstration farms in their respective districts and will take part in the operations of the farms more or less.

Hon. George Lawrence has likewise invited the agriculturists of the province to avail themselves of the advice and services of these young men graduates and to lend their support and co-operation in the department's efforts to render practical assistance to the farmers of Manitoba.

CALF-FEEDING COMPETITION

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THE first calf-feeding competition for boys ever held in Canada was one of the interesting events at the Winter Fair, Brandon, Manitoba, in March, 1914. It was inaugurated by the

Manitoba Winter Fair and Fat Stock Association with the idea of stimulating among the boys, in a practical way, a greater interest in feeding and caring for cattle. At that first competition seven lads, all under seven-

teen years of age, entered with exhibits of such excellence that every patron of Manitoba's Winter Fair was strongly impressed by the educational possibilities of the event.

In fact so successful was the experiment that prominent members of the Canadian Bankers' Association, who witnessed the results and were quick to see the benefits of such a competition to the live stock industry of Western Canada, promptly buttonholed Mr. J. D. McGregor, the President of the Winter Fair. Presently the latter stepped into the Arena and announced to the thousands there that the Bankers' Associa-

calves, and, after examining the lineup, Mr. Leslie Smith of St. Cloud, Minn., who acted as judge of the competition, stated that many of the animals were superior to anything he had ever seen. They were fit to exhibit at the best live stock shows on the continent. The breeds were as follows: Shorthorns, 17; Aberdeen-Angus, 12; Herefords, 7.

The published rules governing the competition required that the competitors feed and care for their respective exhibits for at least six months before the date of the fair, and each entry had to be accompanied by a certificate from parent or guardian



THE TWENTY PRIZE-WINNING CALVES IN THE BOYS' CALF-FEEDING COMPETITION

tion would donate \$1,000 for a calf competition for grade steers or heifers calved in 1914, to be held in 1915, and to be open to all boys under seventeen years of age.

THE SECOND COMPETITION

This second boys' calf-feeding competition has recently been held at Brandon and has more than justified the expectations of its sponsors. The thousand dollars was divided into twenty cash prizes, varying from \$100 first prize, to \$25 for twentieth place. Thirty-six boys, from six to sixteen years of age, entered for the competition with well-finished

that the conditions had been strictly carried out.

Of such uniform excellence were the exhibits of the unsuccessful contestants that the fair board decided to award a consolation prize of \$5 cash to each. This appreciation of the care bestowed by the boys should do much to encourage them to renewed efforts. The provincial government's sympathy for the undertaking was manifested by a grant of \$750 towards defraying the expenses of the competition.

The energetic secretary of the Manitoba Winter Fair, Mr. W. I. Smale, is of the opinion that the number of entries in the boys' calf-

feeding competition this year would have been doubled had the Winter Fair been held as in former years. On account of war conditions, however, it was deemed advisable to cancel the big western event and the fair board's large auditorium was turned over to the Militia Department for the use of the soldiers in training.

A sale of pure-bred bulls was arranged, however, to take place at the time of the calf-feeding competition and every animal brought in by the farmers of the province was sold at a fair price. Uncertainty about the

and in this connection the value of the Manitoba Winter Fair's calf competitions will be readily conceded. The effect of these competitions has been proved already to be far reaching. The boys show marked interest in what is to them a big event in which they can take a personal interest. They discuss with pride the things they have learned in preparing for the contest and in many cases can hand out more sound sense about feeding cattle than the average farmer. These boys are interested now and have a better idea of what farming really means.



FIRST AND SECOND PRIZE-WINNERS IN BOYS' CALF-FEEDING COMPETITION

fair undoubtedly caused many prospective competitors in the calf competition to abandon their fitting of animals, while others from far-distant points hesitated to proceed, owing to the expense of shipping a single animal instead of the several exhibits which ordinarily they would have contributed had the fair been held as usual.

EFFECT OF THE SYSTEM

The problem of making farm life more attractive to the younger generation is everywhere recognized

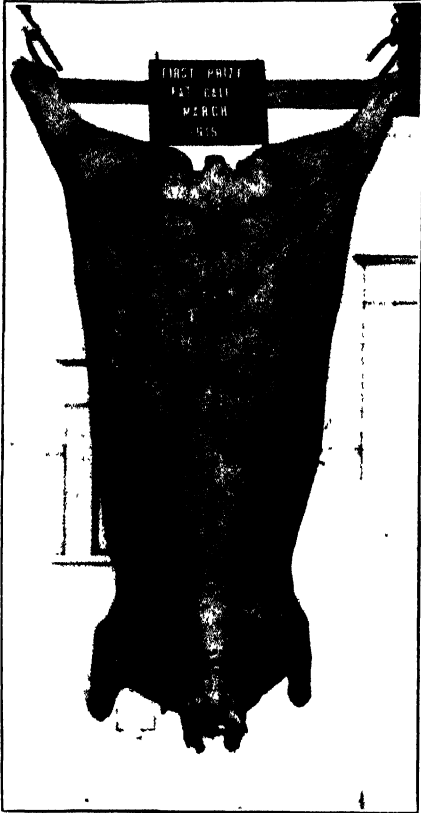
The profession of agriculture assumes a new perspective to them and they can see that there is plenty of room to develop every talent with which they have been endowed. It only remains for the parents to do their part and the farm boys of Western Canada will surprise them by what they can accomplish.

It will be remembered that to Manitoba belongs the great honour of capturing the sweepstakes, twice in succession, for the finest steers on the continent at the famous International Live Stock Show, held annually

in Chicago. Western Canada has the feeds and the conditions necessary for producing championship live stock products, and there is no

market for his high grade calves, and enables his boys to become expert feeders of baby beeves while going to school. Slaughtering of calves will be greatly diminished and altogether the results will be of general benefit.

The initial efforts of the Brandon Fair Board in boys' calf competitions have been a decided success and the competitions have only commenced. They will be repeated in 1916, when there seems no reason to doubt that the entry list will be greatly augmented. The Canadian Bankers' Association is in hearty sympathy with this movement and can be depended upon to render generous financial assistance.



BACK VIEW OF CARCASS OF FIRST PRIZE FAT CALF

question that these calf-feeding competitions for the boys will do much to awaken everyone to the wonderful possibilities of the live stock industry in the West.

The production of baby beef, as Mr. Smale points out, is being advocated in all the States to the south. It commands the highest market price and it means quick returns. The production of baby beef gives the farmer an opportunity of converting his feed crop into the very best class of beef, secures a home



FRONT VIEW OF CARCASS OF FIRST PRIZE FAT CALF

SASKATCHEWAN

DUTIES OF DISTRICT REPRESENTATIVES

IN defining the duties of District Representatives of the Department of Agriculture, it is decreed that they shall be permanent outside officials, not attached to any branch and reporting to the Deputy Minister. Each representative is to have permanent headquarters in a centrally located town, equipped with agricultural publications, and is to be in his office every week-end, if possible. He is instructed to further the agricultural interests of his district by:

- (a) Encouraging and demonstrating better methods of production;
- (b) Promoting greater diversity of production;
- (c) Assisting to secure stable markets and profitable prices for the products of the district;

(d) Helping to organize (where advisable, and after consulting the Department) agricultural societies, co-operative associations and creameries, and other institutions to promote agricultural betterment;

(e) Doing what can be done to improve the conditions of rural life, such as by promoting tree-planting, farmstead planning and ornamentation, road dragging, rural mail delivery, rural telephones, etc.;

(f) Interesting young people in agriculture and its possibilities and encouraging likely young men and women to attend short courses in agriculture and domestic science and, where possible, the college of agriculture.

Four of these representatives have been appointed, whose names and headquarters are as follows:

T. L. Guild, Shaunavon; J. G. Raynor, Battleford; W. Betts, Rose-town; J. L. Brown, Swift Current.

AGRICULTURAL SECRETARIES

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE

MOST readers of THE GAZETTE are familiar to some extent with the District Representative work that has been carried on to an ever-increasing extent in Ontario during recent years. I believe that the Ontario Department of Agriculture now has a representative, with from one to three assistants in the summer time, and a district office, in at least forty of the counties of Ontario, and spends something like \$160,000 a year in the maintenance of this very effective form of service. Through the aid of funds made available under a recent United States statute, also, County Agents are being placed in an ever-increasing number of counties in all those States of the Union that are

most progressive from an agricultural point of view. These well-trained men with local headquarters, local atmosphere and a personal knowledge of local conditions are found to be very effective agents in bettering agricultural conditions.

In Saskatchewan, however, we have no counties. Our unit of local self-government is the rural municipality, which is only nine townships in extent as a rule, and of which in consequence there are already 300 in the province. It is obviously impossible, for lack both of trained men and money, for the provincial Government to place a district representative in each rural municipality in the province. Yet there is plenty of work within the

boundaries of any one rural municipality in this new sparsely settled province for the energies of a good man.

The noxious weeds problem and The Noxious Weeds' Act alike require that a rural municipality appoint one or more weed inspectors to deal with this question. Our plan is to encourage rural municipal councils to appoint a successful and progressive man (either local or from outside) to promote better farming in their municipality throughout the summer months, or even throughout the year if possible, instead of merely appointing a kind of police officer to enforce the policy of destroying weeds. Weeds are a by-product of poor farming. If the farming can be improved the weeds will be taken care of and the only need for a weed inspector will be to look after the weeds on abandoned lands, road allowances and farms held by absentee owners.

In 1914, some 55 rural municipalities, in response to our suggestion, appointed an agricultural secretary instead of a weed inspector—the secretary, of course, having all the powers of a weed inspector, but having in addition a great many other duties calculated to improve the farming methods and better rural conditions in his district. These secretaries were appointed for terms varying from three to twelve months. The aggregate amount paid by these 55 councils to these men was \$46,000. Perhaps forty of these fifty-five secretaries are of the type that we wished to see appointed, and these forty did good work during the past summer. It is not yet certain how many of these fifty-five councils will adopt it. No doubt in municipalities where a poor man was appointed and did not make good, and in municipalities in which crops were almost a total failure, or were very poor, no secretary will be appointed this year. On the other hand some municipalities in which crops were normal and which border

on municipalities in which good live secretaries worked throughout 1914, have appointed a secretary for 1915.

The department throughout 1914 kept five field representatives at work over the province, meeting these agricultural secretaries, and the weed inspectors of other municipalities, and helping them in what ways they could.

It is not the purpose of the Saskatchewan government to saddle the rural municipalities by means of this agricultural secretary plan with all the work and expense which the Ontario provincial government, with the aid of the Dominion subsidy for agricultural instruction, assumes. We still plan to have our district representatives and have recently appointed the first four. What I wish to point out is, that our system of local self-government with its very large number of comparatively small units, does not as it stands lend itself to the co-operation between municipal and provincial authorities that the county system in Ontario, and in the States of the Union, makes possible. Our districts will have to be formed for the time being without much reference to municipal boundaries and our district representatives will be officers of the provincial government, all of whose salary and expenses will be borne by the provincial government with the aid of the Dominion subsidy for agricultural instruction. In Ontario some part of the expenses of the district representative's office are borne by the county authorities. We are suggesting to our municipal authorities that for the present, until more men qualified for district representative work are available, instead of co-operating with us in bearing part of the expenses of a district representative's office, they do themselves select a local man with less training who will be their own officer (agricultural secretary) and work entirely within their own municipality and will be paid by them and therefore be responsible to them,

although directed and assisted to some extent by this department.

The plan is not to be regarded as a permanent solution of this phase of the problem of agricultural instruction. It will probably merely serve to tide us over in some measure until such time as a steady supply of

trained and suitable men, and machinery, are available, whereby some larger unit than a rural municipality can co-operate with the department in maintaining a competent, qualified district representative throughout the year.

ALBERTA

NEW APPOINTMENTS IN THE DEPARTMENT OF AGRICULTURE

BY order-in-council of April 29th the Alberta Government took a definite step toward the establishment of a college of agriculture which will be a part of the University of Alberta.

Professor E. A. Howes, B.S.A., principal of the school of Agriculture at Vermilion, is appointed dean of the faculty of agriculture. Mr. George Harcourt, B.S.A., Deputy Minister of Agriculture, is appointed assistant to the dean.

In the agricultural department of the University only advanced work will be taught, beginning with the

third year. The board of Agricultural education will fix the course of study in both schools of agriculture and the university, but it has been settled that to become eligible for entry to the latter, students must have taken the two-year course in one of the schools of agriculture. For the opening of the university there are in readiness sixty-seven graduates of these schools.

Mr. H. A. Craig, B.S.A., superintendent of demonstration farms, is appointed Deputy Minister of Agriculture. Mr. Sydney Carlyle, assistant to Mr. Craig, is to be superintendent of demonstration farms.

TRADE ENCOURAGEMENT OF AGRICULTURE

A series of twenty lectures on agricultural subjects, under the direction of Hon. Duncan Marshall, Minister of Agriculture for Alberta, was given in the Board of Trade rooms, Calgary, between February 8th and February 20th. The Minister and nine lecturers from the provincial agricultural schools and demonstration farms took part, their subjects including dairy cattle,

horses, beef cattle, poultry, sheep enterprises, mutton breeds and their management, grading up a dairy herd, foodstuffs available to the Alberta poultryman, hog production, cutting up and curing of pork, soil cultivation, grain judging, dairy productions, and a resumé of the work of the Department of Agriculture. The total attendance was 2,400, an average of 120 for each lecture.

SCHOOLS OF AGRICULTURE AWARDS

Twenty-three men students and 7 women at Olds, 28 men and 8 women at Claresholm and 16 men and 5 women at Vermilion, making

a total of 67 men and 20 women, have been awarded diplomas this year at the Alberta schools of agriculture.

BRITISH COLUMBIA

RECENT AGRICULTURAL LEGISLATION

AT this year's session of the British Columbia legislature the chief measure passed was "The Agricultural Act, 1915," providing for the organization of an agricultural credit commission for the loaning of money at reasonable rates of interest to persons or associations engaged in developing agricultural holdings. The Act is divided into eight parts. The first part constitutes the commission, which is to consist of a superintendent and four directors, the superintendent being also a director. He is to be appointed by the Lieutenant-Governor and is to serve ten years, unless removed upon an address from the Legislative Assembly. Two directors are to be similarly appointed and the other two are to be the Deputy Minister of Finance and the Deputy Minister of Agriculture. A Deputy Superintendent may be appointed by the commission if thought advisable. This part also defines the duties of the commission, the manner of the loans, the methods of payment and repayment and the management of the commission's funds. It is declared lawful for the commission to accept as security for loans first mortgages upon agricultural land in the province that is free from encumbrances. Loans may be made for the following purpose.—

(a) The acquiring of land for agricultural purposes and the satisfaction of encumbrances on land used for such purposes:

(b) The clearing of land, draining, dyking, water-storage, and irrigation-works:

(c) The erection of farm buildings:

(d) The purchase of live and dead stock, machinery, and fertilizers:

(e) Discharging liabilities incurred for the improvement and development of land used for agricultural purposes, and any purpose calculated to increase land productiveness:

(f) And any purpose which in the opinion of the Commission will increase the productiveness of the land in respect of which the loan is proposed:

(g) Carrying out the objects of any association; subject to approval by Order-in-Council as hereinafter provided:

(h) Taking over in whole or in part and with the approval of the Lieutenant-Governor-in-Council, by Order in Council, any existing loan by the Crown in right of the province of British Columbia to any association, or any debentures issued by any association.

No loan can be granted for less than \$250, nor for more than \$10,000 to any borrower other than an association. If the sum required exceeds the latter amount, sanction of an order in council must be obtained. Loans are limited to sixty per cent of the assessed value of the security offered. No loans can be made to members or employees of the commission. Conditions are provided for long-dated loans, extending either to 36 years and 6 months, 30 years or 20 years.

The working capital of the commission is to be raised by the issue of securities and from money appropriated for the purpose by the Legislative Assembly and from such funds as may be derived through the operations of the commission.

THE OPERATIVE ASSOCIATIONS

Part II describes the associations that can take advantage of the provisions of the Act. These include: co-operative farmers' institutes, co-operative women's institutes, fruit-growers' associations, agricultural fair associations, the British Columbia Stock Breeders' Association, the British Columbia Dairymen's Association and the British Columbia Poultryman's Association. Not alone the Legislative Assembly but the council of any municipality may grant money in aid of a duly organized farmers' institute. The Minister is authorized to employ a portion of the legislative grant for the promotion of a central farmers' institute embracing the whole province. Delegates to this

institute can each year appoint an advisory board of six members, two from Vancouver Island, two from the Lower Mainland and two from the Upper Mainland, who shall advise the Minister on matters of agricultural interest. Women's institutes are also provided for.

Part III deals with the scope, operation and organization of co-operative societies. Part IV formulates arrangements for the formation of district and central exchanges. Part V consists of clauses governing associations incorporated under the Act. Part VI provides for the appointment by the Lieutenant Governor-in-Council of inspectors of creameries, also defining their duties. Part VII creates a provincial board of horticulture to advise the Minister on horticultural matters. Part VIII is of a miscellaneous character, dealing with details general to the other parts.

MISCELLANEOUS LEGISLATION

Other acts passed were to amend the Animals Act, to amend the Line Fences Act, to amend the Pound District Act and to amend the Drainage and Dyking Act. The Animals Act was amended by making it un-

lawful for stallions of one year old and upwards to run at large at any time anywhere, except by definition of the Lieutenant-Governor. The Revised Statutes of 1911 limited the operation of the clause to west of the Cascade Mountains and made special provisions regarding stallions two years old and upwards. Bulls over nine months old are restricted in the same way, instead of special provision being made as regards time and locality. The Line Fences Act was amended to apply to extra municipal ditches and watercourses and to make regulations for boundary ditches. The Pound District Act was amended by more definitely defining its application than was the case in the Act of 1912. Any quadruped, except a dog or a cat, running at large in any pound district can now be impounded. The title of the Drainage, Dyking and Irrigation Act of 1913 was amended in title and provision by striking out the word "Irrigation."

GRANTS FOR AGRICULTURE

The following grants on agricultural account are called for in the estimates for the year ending 31st March, 1916:—

Administration and Outside Service (including agricultural products for Departmental exhibition room and miscellaneous expenditure)	\$20,000 00
Board of Horticulture - expenses of members attending meetings	500 00
Compensation to owners of cattle slaughtered for tuberculosis	35,060 00
Crop competitions in commercial fruits and vegetables, and garden and vacant lot competitions and demonstrations	2,000 00
Demonstration orchards and experimental trees	2,000 00
Demonstration spraying	1,500 00
Fruit-handling, cold-storage, and pre-cooling investigation work	2,000 00
Fruit-packing Schools	2,000 00
Government Exhibit, Panama-Pacific Exposition	8,000 00
In aid of Agricultural Associations	50,000 00
In aid of B.C. Dairymen's Association	3,000 00
In aid of B.C. Entomological Society	250 00
In aid of B.C. Fruit-growers' Association	5,000 00
In aid of B.C. Poultry Association	3,000 00
In aid of B.C. Stock-breeders' Association	3,000 00
In aid of Flockmasters' Association	250 00
In aid of Farmers' Institutes (including educational work)	22,500 00
In aid of Women's Institutes (including educational work)	5,000 00
In aid of Poultry Shows	4,000 00
Inspection of Nursery-stock, trees, plants, etc.	20,000 00
Suppression of Diseases affecting fruits, vegetables, plants, etc.	15,000 00
Suppression of noxious weeds	5,000 00
Travelling expenses of officers on duty	30,000 00
Total	\$239,000 00

HORTICULTURAL INSTRUCTION GIVEN BY THE HORTICULTURAL BRANCH DURING FEBRUARY, 1915

DURING February the activities of the Horticultural Branch were confined to three main lines, namely: pruning, packing and orchard management.

The instruction in pruning was given in schools lasting over a period of five days, which consisted of ten three-hour demonstrations.

During February, pruning schools were held at the following nineteen points:—

North Vancouver (2 schools), Hammond, Gabriola Island, Duncan, Armstrong, Westbank, Canoe, Oyama, Glenmore, Slocan Park, Arrow Park, East Arrow Park, Boswell, Creston, Willow Point, Shirley, Canyon City, Syringa Creek and Erickson.

By March 10th, over sixty applications had been received for pruning schools since the beginning of the year, and more are expected.

The work in apple packing has not been so popular as it was in the past. This, however, does not mean a decrease in interest, but shows

that a sufficient numbers of packers have already been produced to handle our present output. The instruction in packing was also given in schools like the pruning work.

During February apple packing schools were held at the following nine points: Mission City, Abbotsford, Chilliwack (2 schools), Huntingdon, Vernon, Coldstream, Kelowna, West Summerland and Nelson.

A total of twenty-five schools has been applied for since the beginning of the year.

The general lectures on orchard management were given during the two-week short course held at Kelowna, February 2nd to 13th, inclusive. This short course was the first of its kind held in British Columbia. While the attendance was not as large as at some of the short courses held at other points, it was well maintained throughout the course, showing that the work was of interest to those attending.

Mr. T. J. Harrison, B.S.A., for some time Superintendent of the Experimental Farm at Indian Head, Sask., has been appointed Professor of Field Husbandry at the Manitoba Agricultural College. To succeed him at Indian Head Mr. W. H. Gibson, B.S.A., has been appointed. Mr. Gibson, who is a graduate of Macdonald College, has for some time been Assistant Superintendent at the Experiment Station at Lacombe, Alberta.

Time is hurrying on rapidly to a point where a light will beat strongly on you and all your doings, and the attention of the nation will be concentrated upon your class, and the way in which you discharge your functions in the national life. You all know that half the world is at war. Many of you realize it painfully and intimately through brothers, sons, kin or friends who are actual participants in the fighting. In that sense you need no more reminder that the world is at war, but you do not yet realize that you are more than onlookers, that you are called on to be participants in the struggle, not as combatants, but as part of that other noble army whose business it is in many ways to heal up the wounds of the combatants, to make good the wastage in society, and to ameliorate the evil effects of the war.—From *"The Irish Homestead"*.

PART III

Rural Science

RELATIONSHIP OF THE SCHOOL GARDEN TO THE CLASS ROOM

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION, MANITOBA

THE permanency of any nation will depend upon the extent of happy, prosperous, permanent homes that are developed within its borders, and the purpose of each and every subject taught within the public schools should be to produce such.

It is because of its peculiar fitness for such a purpose that school gardening is considered of such importance in the mind of the real, live, up-to-date teacher.

Some teachers, judging from what they attempt in this work, still continue to consider that school gardening is an additional subject to be carried on during the spring months, when work inside becomes rather irksome, even distasteful. These are merely playing with the subject.

All school subjects should be educational and such the garden should be made. The school garden should have at least two great values, either of which will justify its continuance; these are: (1) Aesthetic. (2) Economic.

1. The æsthetic value—School gardening should aim at creating an interest in home beautifying, the principles underlying such, the best materials to use, the methods of planting and caring for such material.

2. The economic value—In the school garden an interest in and a desire should be created for, experimenting with various shrubs, flowers, vegetables and grains. Through



SCHOOL GARDENERS AT WORK AT HOME

these experiments the pupils learn in a practical manner the principles of scientific horticulture and agriculture.

The children's plots at school must necessarily be small, but, even so, they may produce the above results. They will fail in their true purpose if their counterpart on a larger scale is not carried on by the children in their homes.

Most teachers in Manitoba follow

up the school gardening with competitions in home gardening, and these gardens are regularly visited, inspected and valued throughout the summer.

Some teachers last year required their pupils at home to establish plots in (1) Alfalfa, for fodder and for seed; (2) Three year seed selection, wheat, oats and barley; (3) A three year crop rotation.

This year several hundred boys have been formed into clubs to compete in the growing of "husking corn" in each inspectorate and finally in a provincial competition.

The home gardens are of consider-

able value to the interested teacher. They furnish a splendid opportunity for visiting the homes socially, and reaching the parents as no other excuse would do so successfully. They provide the teacher a means of impressing facts taught at school, correcting errors, suggesting improvements, instilling higher ideals of taste, encouraging original and independent experiments.

The teacher that does not follow up gardens at school with those at home, fails to realize the purpose of the work and loses more than half the real pleasure and profit derived from it.

HOME PROJECTS AS AN ADJUNCT TO AGRICULTURAL INSTRUCTION IN THE SCHOOL

NOVA SCOTIA

BY L. A. DeWOLFE, DIRECTOR ELEMENTARY AGRICULTURAL INSTRUCTION, TRURO, N.S.

HOME projects should include all useful work that requires initiative or intelligent action on the part of the pupils. In the past, home work and school work have been entirely separated. For a long time, parents have been urged to take an interest in the schools. With equal force are teachers now urged to take an interest in the homes.

Until such mutual co-operation exists, not much progress can be made in community education. Possibly the greatest connecting link between the school and the home is the child's home garden. The child is proud to have his teacher come to inspect his garden; and, incidentally, the teacher sees a side of the boy's life that she will never see at school. On her tour of inspection, she meets the mother, with whom she talks over Willie's and Mary's school work and school attitude. The mother enumerates the various outside interests that seem to detract from school work. She also com-

plains of the irresponsible and half-hearted way in which the children perform their various home duties.

Here is where the teacher's chance comes. The mother is worried. The children are not helpful. The teacher explains how, in some schools, credits are given for performing home duties properly. She explains that education means the ability to wash dishes or feed chickens properly fully as much as it means the recitation of historical facts or the solution of artificial problems in arithmetic. Therefore, if the school can give "marks" for the one, it can for the other.

There is little doubt that the mother will give her consent to try the experiment, and will assist the teacher by reporting the "marks" due for home duties.

Because teachers have neglected this side of a child's development, other organizations such as the Boy Scouts and the Camp Fire Girls have come to the rescue. But these do not reach every community. It

is, therefore, necessary that the school meet its responsibility in this matter.

A list of home projects seems superfluous. Everything belonging to a child's development is properly within range of the school. Boys will make gardens, care for chickens, build chicken houses, paint or stain small buildings, keep the lawn neat, feed farm animals, test milk, judge stock, and will be generally useful and helpful. They will do this for their teacher; and she rewards them with the coveted "marks".

Similarly, girls will do all they can to help their mother. The old excuse "I haven't time, for I must

learn my lessons", will have lost its force. Home duties are now on equal footing with the lessons.

Besides activities which assist the farm and home work, such cultural activities as music and painting lessons, active membership in a debating society or other community organization, and taking part in a musical club, can be encouraged by the teacher.

In short, everything that will help the boys and girls to be self-sustaining and will make them useful and agreeable members of society, comes under the head "Home Projects." All that is wanted is THE TEACHER.

NEW BRUNSWICK

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION

THE value of a school garden as a feature of school ground improvement, the influence of well kept, attractive school grounds in moulding character and cultivating æsthetic taste, the opportunities afforded through these channels of giving instruction and training of a practical objective nature, have been dealt with in former articles. If during the past years careful instruction in the school room has been interwoven with outdoor activities, and related community life problems, if among the various school subjects nature study has been given its proper place, if the school garden has been made to play its part in promoting local knowledge, there will be much information practically obtained by the pupils, that they will be seeking opportunity and place to put to good account at home. Here, home plot work for school children, under the supervision of the teacher, becomes of value.

If the school has done its part wisely and well, the application of its instruction is a natural sequence. At home the child is free to work out

his conceptions of the principles inculcated at school, to do so at a time when he is still in school or in touch with it, so that if he meets difficulties— as he assuredly will— if he finds some things work out differently from what he thought they would, he is yet able to appeal to his instructor and to be guided, encouraged, and helped on the way to success.

As we have said the pupil should be free to work out his home schemes. In accordance with its school connection, however, the supervision of the teacher is important. It is well to encourage pupils to begin the work of preparation of home plots in the fall. If this is done it acts as a stimulus in study, observation and reading during the winter. The connection between education and success, between theory and practice, is thus established.

Teachers should, so far as possible, visit home plots three times a year at least, once in the fall after preparation of soil has been made for winter, once in spring when seed bed has been fully prepared, and again just before close of school term in June.

At these visits careful notes should be made of conditions, and suggestions given linking home work with school effort.

This home plot work is of great value. It dignifies manual labor, it connects the home with the school by a bond of sympathy and direct relation. The school becomes an institution of direct community value, a force in securing larger production and more intelligent industry. Manual labor as a feature connected with school life is exalted and encouraged.

Last year there were but 89 Home Plots worked by children of the public schools in New Brunswick. These were in general of a fairly satisfactory character. As school garden work is in its initial stages here, we are not seeking to promote home plot work to more than a corresponding degree.

The present year as indicated by the requests for seeds received up to date promises to see home plot work in a limited degree extended into most, if not all, of the counties of the province.

It is our policy to have several pupils in each district plant home plots with the same variety of seed. In this way we hope to encourage competition in both cultivation and production and to secure greater interest in school application. Each pupil is required to keep dated records of work performed with descriptions of methods followed and observations made. The neatness, definiteness and completeness with which such records are kept will be items for consideration of value as school work in the fall term. Pupils' records are to be handed to teacher for transmittal to the Director.

From these records received from various parts of the province a tabulated report of yields in crops raised by pupils will be prepared.

Encouragement is being given in establishing clubs in schools. In union there is strength. Each pupil helps all the others. In the multitude of counsel there is wisdom. Pupils too will thus become accustomed to co-operative effort, and under wise guidance will profit by a practical knowledge of its best features.

"The hope of farming in Alberta lies in the achievements of the men and women engaged in it, and those who have had the advantage of both a practical and scientific training in Agriculture should lead their community in an effort to increase the profits and improve the conditions of the people on the land. It is well to keep in mind that farming is no get-rich-quick scheme, but it is the surest, safest means of establishing a home amid surroundings and conditions that make for pleasure, comfort, and good health; and, with a reasonable knowledge of its science, agriculture will become a business and life work of absorbing interest and of achievement large enough to satisfy the most ambitious of men."—*Hon. Duncan Marshall to the students of the Alberta Schools of Agriculture.*

THE PREPARATION AND MOUNTING OF PLANTS AND SEEDS

NEW BRUNSWICK

BY R. P. GORHAM, B.S.A., INSTRUCTOR IN HORTICULTURE AND BIOLOGY

AT present we give instruction at our winter courses under four heads: (1) Weeds of grain crops; (2) Weeds of grass crops; (3) Weeds of cultivated crops; (4) Weeds of pasture lands.

The identification of the weeds and their seeds, and the common methods of control are studied in each case.

For the purpose of identification we make use of dry specimens collected during the summer, in conjunction with the best coloured illustrations of the weeds we can obtain. The dry specimens are mounted in two ways: on 11 x 14 inch sheets of medium weight card board, and in 8 x 12 inch Riker mounts. In the latter the specimens are protected by glass and are held tightly in position so that they do not become battered out of recognition or lose essential parts by rough handling, as so frequently occurs in the case of those mounted on cards. The glass covering also allows a close examination of any part with a tripod magnifier without danger of injury by careless hands.

As the Riker mount is somewhat expensive a cheap home-made mount, recommended by Mr. Wm. McIntosh, Curator of the Natural History Museum, St. John, N.B., is being experimented with and promises to give good satisfaction. This is made by tacking together a light frame 8 x 12 inches in size, made of dry pine strips cut $\frac{1}{2}$ x $\frac{1}{4}$ inch. A piece of 8 x 12 inch light straw board is tacked on the back of this. A layer of white sheet wadding or absorbent cotton is

placed in the shallow box thus formed, the dry specimen is arranged on the wadding, and a sheet of 8 x 12 inch window glass pressed firmly down upon specimen and frame. The edges are then bound with a strip of bookbinder's cloth cut wide enough to give a $\frac{1}{4}$ inch lap on the glass and on the cardboard at the back. This goes all round the edge and is fastened with glue, making the case proof against museum parasites and nearly air tight.

Weed seeds are given to the students in as nearly natural condition as possible, i.e., in the pod, capsule or head in which they develop. In this way we think they may be more readily associated with the plant producing them than if given in the threshed and sifted state. Examination of the seed is first made with the tripod magnifier and then with the lowest power of the botanical microscope. Drawings are made of the different seeds, with special attention paid to the features that distinguish one from another, and the possible uses to the plant of such features, e.g., the spines on hawkweed, pappus on thistle, and polished surface on pigweed seeds.

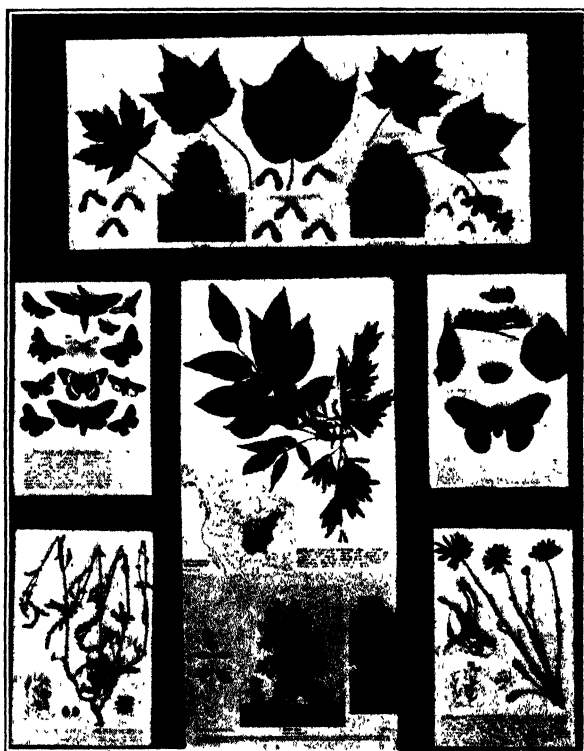
Daily tests in the identification of all seeds already examined, when mixed with seeds of clover, grass and grain, are given to impress the points of difference on the students, and to accustom them by frequent association to recognize certain forms at sight. No special display of weed seeds is made, but one of the Dominion Seed Branch reference collections is kept in the laboratory for general use.

NATURAL HISTORY SOCIETY OF NEW BRUNSWICK

BY WILLIAM MCINTOSH, CURATOR

IN our work here we found it necessary to procure a method of mounting plants and insects which would combine the following points: lightness, strength, absolute protection for the specimen from dust, handling and sudden jars, economy of space, and, last, but by no means least, cheapness. Some of the manufactured mounts met our

under seven cents. The materials used, with their prices, were as follows: $\frac{3}{4}$ inch clear pine board planed on both sides ripped into $\frac{1}{4}$ inch strips, 75 cents; glass 8 x 12, $2\frac{3}{4}$ cents per light by the box; cardboard bottoms 8 x 12, 55 cents per hundred; surgical cotton (the most expensive item), 60 cents per pound in 4 ounce cartons, 8 inches wide;



TABLETS USED BY NATURAL HISTORY SOCIETY OF NEW BRUNSWICK IN MOUNTING PLANTS AND INSECTS

requirements, but, with our limited means, the cost was prohibitive. Upon investigation, we found that they could be made much cheaper by our own staff.

We decided to make our general purpose tablets 8 x 12 inches. These cost, when completed, a fraction

(later we used a cheap cotton for backing and faced the mounts with surgical cotton); bookbinders' leatherette cloth, 40 inches wide, 25 cents per yard; fish glue, brads and tacks, 62 cents. The wooden strips were cut the desired length, the four sides nailed together with one inch

brads, the cardboard bottoms tacked on, the cotton cut and laid in smoothly, and the tablets were ready for the specimens and labels. These were placed on the cotton, covered with the glass and bound with leatherette cloth cut into strips two inches wide.

For the majority of plant specimens we found the $\frac{3}{4}$ inch tablet unnecessarily deep so we split the wooden strips in half and bound the cases with $1\frac{1}{4}$ inch binding. Our weed collection includes fifty of the most common weeds of New Brunswick. Each tablet contains a specimen of the plant in flower, a small cluster of seeds, a picture of the weed and an enlarged drawing of the seed, both coloured. Many of these pictures were cut from Bulletin No. S. 6, Dominion Agricultural Department, and coloured by hand. They were very effective. The label gives the common and scientific names, duration, method of eradication and other necessary information.

The insect series includes the insect orders, insects attacking field and garden crops, fruits and animals, household pests, beneficial insects, etc. In this collection are about sixty tablets nearly all of which are 8 x 12 inches.

Tablets of other sizes were also

made, the smallest being 6 x 8 inches and the largest 12 x 16 and 12 x 24, care being taken to make all sizes in multiples of eight for the sake of uniformity in exhibiting. In the upper part of the accompanying photograph is a tablet of the largest size in which are shown leaves of the five species of maples found in New Brunswick. These tablets are loaned to schools accompanied with a lesson. A series of such tablets would make a useful and effective decoration for any school. A more complete method of preparing a tree collection is shown in the central tablet. Here, we have the leaves and fruit of the tree, a map showing distribution, a picture of the tree and a label. If the bark and a small section of sapling were also shown the result would be a very complete exhibit. In our museum, each tablet is accompanied by cross and longitudinal sections of the wood.

We have found these tablets very satisfactory. Part of our insect and weed collections has travelled hundreds of miles in the government agricultural train, been expressed to distant points on several occasions, and is constantly being loaned to schools. The specimens are in as good a condition as when they were mounted.

ONTARIO

BY W. H. WRIGHT, B.S.A., DEMONSTRATOR DEPARTMENT OF BOTANY, AGRICULTURAL COLLEGE

THOSE who are connected with the educational side of agriculture will in all probability find it most useful to have, for class work and exhibition purposes, mounted specimens of the weeds and plants affected with the diseases of their locality. In this article are outlined simple methods of obtaining these.

COLLECTING WEEDS

When collecting specimens for

mounting, typical representatives of the plants required should be collected. The plant should be removed from the soil with as much as possible of the root system attached, and should be placed in a covered basket, or better still a regular botanical vasculum (Fig. 1), without being crushed or bent more than is necessary. A useful sized vasculum is one about 20 inches long by 9 inches wide, with opening nearly the entire length of one side. If the plants are

sprinkled with water and kept in a closed vasculum they may be left for some hours without being put into the press. Plants with flowers very far advanced should not be chosen, as the petals are liable to drop before being put into the press. Where possible, specimens of the fruit of each plant should be procured.

Pressing and drying.—Heavy blotting paper or any quick absorbent paper, sheets of newspaper, or some cheap soft paper, pressing boards and weights are the requirements for pressing and drying plants. A useful size for the sheets of blotting paper and pressing boards is 14 inches by 20 inches.

not be too heavy at first, particularly if the plants are succulent, as this causes a crushing of leaves and stems, sometimes resulting in blackening. The papers in the press should be changed once or twice during every 24 hours according to the succulency of the plants. When the paper is changed the first time, any further smoothing out or arranging of the specimen should be done. The weights should be gradually increased until the plants are dry. If the drying papers are not changed the plants will become black and discoloured and often mouldy. If the plant has a woody stem, it is generally wise to remove and press the flowers separately. The papers

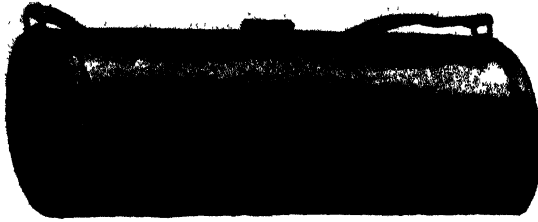


Fig 1.

A BOTANICAL VASCULUM USED FOR COLLECTING PLANTS

The method of procedure is as follows: First, place a couple of sheets of blotting paper on the table, and then a sheet of newspaper; next, take a specimen and lay it flat on the newspaper, spreading the leaves out smooth and arranging the flower to the best advantage. If the root is too big to press conveniently, it may be sliced lengthways to a suitable thickness. Over the specimen is laid another sheet of newspaper and some more blotting paper. This may be repeated till the pile is four or five layers thick. On top of the last sheet of blotting paper, place the pressing board and weights. If nothing better can be obtained, bricks answer the purpose of weighting very well. The weights should

may be dried and used repeatedly.

Mounting. A stiff white or buff mounting cardboard, at least one-eighth of an inch thick, should be chosen. A convenient size for the mount is 12 inches by 17 inches. The specimen should then be carefully arranged and fastened to the mount by means of strips of strong adhesive paper. These strips should be numerous enough and strong enough to hold the specimen firmly to the card without any fear of their being broken. Judgment must be used as to the length and thickness of these strips, as the plants will differ considerably as to size and weight. If the mounts are to be handled much, considerable adhesive paper will be required. Each strip of

paper should be firmly pressed to the part of the plant over which it passes by means of a pair of forceps (Fig. 2). To protect the mount, it is well to cover it with thin transparent celluloid. This is better than glass, as it is light and not easily cracked or broken. The celluloid may be fastened to the mount by passe-partout binding. Fasten the short sides first, allowing the strip to run the full length of the mount. When

tific name, common name and habitat of the plant mounted, also the locality in which it was found, the name of the collector, date and note regarding injury, etc., should be neatly pasted on the left hand corner of the mount equi-distant from the edges.

MOUNTING SPECIMENS SHOWING FUNGOUS DISEASES

Diseased leaves should be pressed

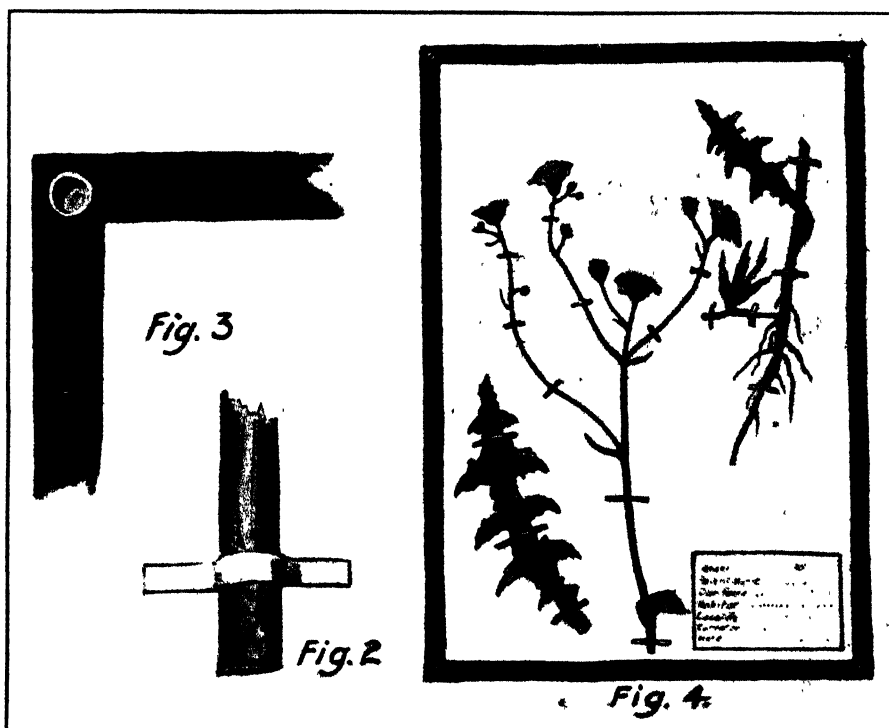


FIG. 2. ADHESIVE PAPER PRESSED FIRMLY TO PLANT

FIG. 3. EYELETS USED IN CORNERS OF MOUNT

FIG. 4. A FINISHED MOUNT

attaching the long sides, the corners should be mitred for the sake of neatness. Eyelets can be obtained from any good stationery store, and are excellent in preserving the corners from injury if the mount is to be hung on the wall.

A label giving the family, scien-

and dried in the manner already described for weeds. Diseased fruits, such as plums affected with "Pockets", or beans attacked by anthracnose, should be carefully dried before mounting. It is often wise to dip such specimens in formalin before drying to prevent



A COMPLETE FUNGUS DISEASE MOUNT

moulding. Very fleshy parts of plants which would be destroyed by drying cannot be mounted, but should be preserved in four per cent formalin. Mounts of fungous diseases, as a rule, need not be very large and should be covered with glass. A handy size is five inches by seven inches. Old photographer's plates, when washed free of the film, furnish excellent glass for such work. The mounting card need not be so heavy as that used in making the weed mounts; about one-eighteenth of an inch in thickness will answer the purpose very well. Many specimens showing fungous diseases are quite thick, so the sides of the mount must be built up somewhat like a picture frame to prevent crushing the specimen with the glass. To do this it will be necessary to have 5 by 7 cards with the centre measuring 4 by 6 inches cut out. These can be glued one above the other until the desired thickness for the frame has been obtained. The frame is then glued to the mount and the glass attached by means of linen passe-partout binding.

MANITOBA

BY H. W. WATSON, DEPARTMENT OF EDUCATION, WINNIPEG

THE plan I advocate in mounting a display of plants is as follows:—

Use heavy white cardboard No. 5, 11 x 14 inches; this is obtained by cutting the stock size 22 x 28 inches into four pieces. These large sheets cost \$6 to \$7 per hundred.

Some teachers have the pupils press and dry the plants between blotting paper before pasting on to the mount. I have found the following plan more expeditious and better

in many ways:—Wash the green plant well, trim off long bulky portions, dry well and fasten immediately upon the mount.

Fastening may be done by sewing with white thread, or with strips of adhesive tape for the stems, and photo paste for the larger leaves.

Soaking the plants in solutions of blue stone for a few minutes before mounting will assist most plants in retaining their natural green colour. Pile the mounted plants upon each

other with blotters between, increasing the weight as the plants become dry. The plants are afterwards labelled with the necessary information neatly in the lower right corner.

Seeds of any nature may be mounted on the same kind of cardboard, in small one-dram vials with screw tops. These vials may be held on the mount with narrow elastic, passed through the mount and over each vial in turn.

Weed seeds may be mounted for closer inspection on the same kind of mount also by punching half-inch holes in the cardboard at regular intervals, and pasting another thinner sheet over the back of the mount. Moisten the hole with mucilage and drop in a few seeds. When the mount has been filled, it should be covered with a pane of glass and the whole bound with passe-partout.

For the mounting of insects, our students obtain the regulation case about two inches deep, provided with a closely fitting lid or glass

cover; these cost about 50 cents each.

A good mount for galls or life histories of insects is made of a shallow pasteboard box about one inch deep. Lay a thick bedding of absorbent cotton on the bottom and place the specimens upon this.



STUDENTS' COLLECTIONS OF MOUNTED PLANTS

Cover the box closely with a glass lid.

These methods of mounting are quite simple, yet if done carefully require sufficient skill for the average public school pupil.

MANITOBA AGRICULTURAL COLLEGE

BY V. W. JACKSON, B.A., PROFESSOR OF BOTANY

IN addition to our college herbarium, which contains some thousand specimens of our Western weeds, we are making special effort to display weeds, plants and seeds in other ways, as I find the ordinary herbarium specimen to be very short lived when placed on exhibition.

We use the Riker mounts for displaying thick specimens of roots and dry fruits and also for the more delicate wax models, which we have made of certain fruits and plants.

I think I originated the punched card system of displaying weed seeds at the Ontario Agricultural College in 1903, and have still the original frame, containing 140 weed seeds, arranged in family rows. These and smaller frames have been very useful

for teaching purposes, the larger one being for reference; and the smaller frames, of which we have fifty, used for class purposes. But I desired a permanent enlargement of weed seeds that would permit of directly observing the characters of the seeds and the difference between them. For this purpose we have made papier mache models 40 x 40 times the actual size of the seed. These are accurately coloured and mounted on frames, and I have found them the most valuable expedient I have tried, for showing how to divide our weed seeds.

These frames were taken out on the Better Farming train last summer, and the farmers could observe the shapes of the seeds and the difference between the Annual and Perennial Sow

Thistle, etc., the length of the ear. In class, the students can observe the details of seed structure without making any black-board drawings. Of course, we still distribute the seed for examination with the microscope, but the enlarged and accurate model calls their attention to the detail which they are to co-operate by direct observation.

Owing to the nature of some waxy looking seeds, we find it necessary to make these in wax, but the papier mache models were cheaper and more durable, and are the models which could most readily be made by an amateur. It is very easily handled and moulded as readily as plastacine, making it easy to get the exact form and detail of the seed, and it hardens in a few hours, as hard as bone, when it may be chiseled and coloured,

as desired, and even fastened with screws from the back on to a frame. I can see great use for this material in making permanent and enlarged models of seeds and fruits.

Various styles of seed vials are used, the larger ones for stock supply, and the smaller ones mounted in frames and arranged in families for class distribution.

For wall displaying of grasses and weeds I am using transom window sash, as frames, and placing small sheaves of grass or card mounts of weeds in these frames, which are hinged on the wall and permit of replacing the specimens from time to time. I have found that grasses are more readily recognized by the student, when in small bunches or sheaves, than by isolated specimens on cards.

SASKATCHEWAN

BY T. N. WILLING, ASSISTANT PROFESSOR OF NATURAL HISTORY, UNIVERSITY OF SASKATCHEWAN

TO really know a species of wild flower we must find it in its natural environment, where the eye can apprehend its colour scheme and become familiar with its variations of form; where also the senses of touch, taste and smell may contribute to our knowledge of its individuality, and where we may learn something of its place in plant society and its relations to its neighbours. It is, however, not always possible for a class of students to enjoy such opportunity, but wild flowers may be utilized for the beautification of school grounds and plots of weeds may be grown or found in places convenient of access for summer classes, or even in boxes or pots indoors for winter use.

It has been found that nothing in the way of a weed display has attracted so much interest as a collection of the noxious and poisonous weeds growing in pots.

Along with these, exhibits of germinating seeds may be made by using smooth glass tumblers or jars in which white blotting paper is first placed next the glass, and then a saw-dust or sand filling to hold moisture. The seed should be put between the paper and the glass near enough to the top for the young plants to force their way out, and display their first leaves. Study of such exhibits should be of great value to weed inspectors and others to whom a knowledge of the appearance of weeds in their earliest stages is necessary. A similar plan may be adopted to show the root system of a weed by having a sheet of glass arranged inside a removable side of the box in which the plant has been grown.

Next in value to living plants for educational displays are dried specimens well prepared, and supplemented by coloured pictures.

Pressed plants attached to paper or cards are soon destroyed by exposure to the varying conditions of the atmosphere if not protected by glass, and even then they lose colour if exposed continually to bright light. The several forms of Riker mounts, which are shallow boxes filled with cotton batting and covered



RIKER MOUNTS USED FOR WEEDS, WEED SEEDS AND INSECTS

with glass, are very well suited to the display of dried specimens, as the cotton adapts itself to the various thicknesses of leaf and stem. These are also excellent for showing the seeds of plants to better advantage for study than in small vials as usually displayed.

PREPARATION FOR MOUNTING

It may not be out of place here to give some hints on the collection and preparation of plants for mounting. A press may be made of slats as in the illustration, or boards may be used with a couple of straps about them. Carry the press to the field with you on a fine day after the dew is gone. In the press have a supply of old newspapers, some sheets of blotting paper, and also sheets of cotton batting of similar size. Choose a suitable specimen, which may be a whole plant or only a part or parts of one, and place it in a folded sheet of the newspaper on one

board of your press, arranging the flowers and leaves as best you can, and over this place a sheet of cotton, then a sheet of blotting paper, another newspaper containing a specimen. In this way fill your press and draw the straps tightly about it. To take up the slackness of the strap, slip a lath under them and turn it on edge. On your return home you may open the press and finding the plants wilted may rearrange some of the leaves, but if any of your specimens be composite flowers with many rays, you should avoid disturbing them, as the rays will curl if you lift the paper to look at them and you cannot get them straight again. After plants have been in the press for half a day or so,



UPPER LEFT CORNER—HERBARIUM SPECIES
UPPER RIGHT CORNER—RIKER MOUNT
LOWER LEFT CORNER—PLANT PRESS
LOWER RIGHT CORNER—FUNGI JARS

take out the damp cotton and blotting paper and replace it with dry. Make such change at intervals of a day or two until the specimens are dry. The length of time

required for drying plants depends on their bulk and the amount of moisture they may contain. In moist climates or in damp weather, specimens may be dried rapidly by inserting corrugated paper between the drying sheets and suspending the press edgewise over a lamp or fire. To retain as much of the natural colour as possible, plants should be dried quickly. A perfect botanical specimen should show all parts of the plants; including flowers and fruit. It is often desirable to

the corner of the sheet and your exhibit is ready for use in a demonstration herbarium.

Herbarium specimens are sometimes attacked by insects and to avoid loss in large collections a poisonous solution of corrosive sublimate, $1\frac{1}{2}$ drams, and carbolic acid $1\frac{1}{2}$ drams in 12 ounces of alcohol, is sprayed or brushed over the dried specimen. When specimens are placed in Riker mounts there is little chance of injury from insects if precautions are taken to avoid the



THE DEMONSTRATION HERBARIUM IN USE

reduce the thickness of a stem by whittling one side of it, and it may also be desirable to cut away some of the leaves to display to better advantage the remainder.

The usual size of sheet for mounting herbarium specimens is $11\frac{1}{2}$ x $16\frac{1}{2}$ inches and on these the dry plants may be fastened by small strips of adhesive tape. The name of the weed, the locality where found, and the date, should be placed on

use of plants already infested.

Mushrooms and similar fungi may be satisfactorily preserved in jars containing a solution of 10 per cent of formalin in water. They should be perfectly fresh when placed in the liquid. The more woody forms, such as shelf fungi, can be kept dry if first placed in a closed jar with a little bi-sulphide of carbon to kill such insects as are frequently found inhabiting fungi.

ALBERTA

SCHOOL OF AGRICULTURE

BY J. C. HOOPER, CLARESHOLM

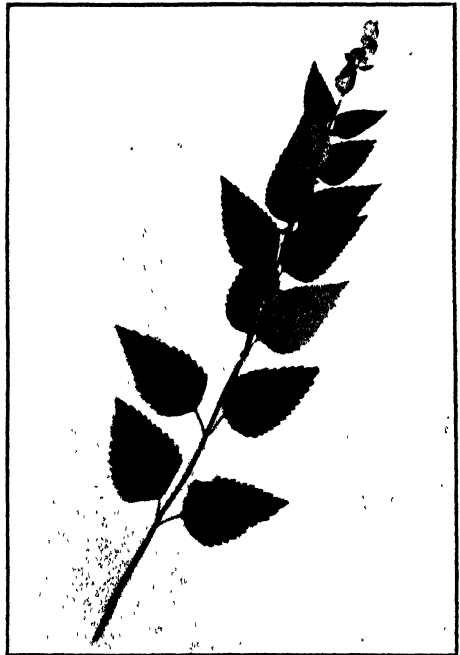
FROM my experience of several years in preparing weeds and other plant specimens for demonstration in schools and colleges where the natural colour of the flowers and leaves is desired, I have found that the alum-bath method is best. The alum-bath, in which the plants are immersed for a few minutes, brings to a sudden termination the life processes and at the same time fixes the plant-cells and their contents in as nearly the living condition as possible. This method has been used at several summer schools for public school teachers, and has been found very satisfactory. Last summer this method was demonstrated at the summer-school held at the University of Alberta and met with the same general approval.

In order to carry on this method of preparing plants the following things are needed:

- (1) A pound of powdered ordinary alum.
- (2) A can of photographer's paste. Corn-starch paste will do very well, but must be applied while hot.
- (3) Passe-partout of several colours.
- (4) Pieces of white cardboard 11 inches by 16.5 inches.
- (5) Pieces of cotton cloth.
- (6) Several pieces of white blotting paper, 12 inches by 14 inches.
- (7) A press consisting of two boards, each 14 inches by 12 inches, by one inch, and a number of bricks, which may be used as a weight. Bricks are most satisfactory as one can vary the weight very easily when necessary.

The teacher may have the fresh plants collected which he or she wishes to prepare, or the pupils may be taken for a nature study trip, and each pupil be asked to select the plant which he or she desires to prepare. As soon as each plant is secured, it should be wrapped in a newspaper, and at once taken to the school; then removed from the

wrappings and all earth or dirt that may be adhering washed off. Following this the plant should be totally immersed in the alum-bath prepared by dissolving powdered alum in water, using two ounces of alum to one gallon of water. They should be immersed for a period of from three to five minutes, depend-



MOUNTED SAMPLE OF LIGHT-GREEN
HEDGE NETTLE (*STRACHYS CORDATA*)

ing on the nature of each plant. A hard woody plant, such as the golden-rod, should be immersed for the full time, but a soft delicate plant, such as the violet, should not be immersed for more than three minutes.

When each pupil removes his or her plant from the alum-bath, it should be laid upon a piece of blotting paper or a folded newspaper, and, by gently patting it with absorbent

cotton, the excess of moisture may be removed. The plant is now ready to be permanently mounted on a piece of white cardboard 11 x 16.5 inches.

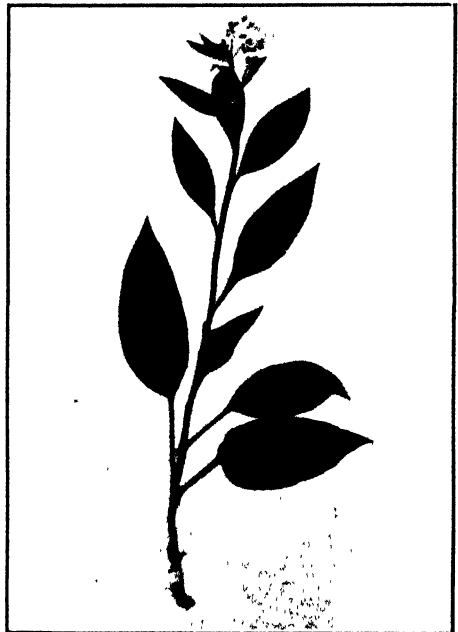


MOUNTED SAMPLE OF CANADIAN GOLDEN-ROD (*SOLIDAGO CANADENSIS*)

Cut narrow strips of passe-partout $\frac{1}{8}$ x 1 inch, or longer if necessary, of a colour to match the plant and attach the plant to the cardboard by fastening the moistened strip of passe-partout across the stem of the plant as near the root as possible. If the stem of the plant does not lie evenly, one or more strips may be necessary.

The pupil is now ready to exercise his or her artistic ability by the most natural arrangement of the leaves and flowers, so as to secure the best effect in showing the whole plant. Suppose it is the upper part of a perennial sow-thistle plant, which is to be mounted: place the lowest right-hand leaf in the exact position on the cardboard you wish it to occupy and gauge with the eye about

the space it will occupy; then with the tip of the second finger apply the photographer's paste to the paper, holding the leaf to be mounted raised above the paper with the other hand. When the paste has been properly spread over the space, press the leaf down with the left hand and gently rub it flat with the fore-finger. When it has been neatly pressed into place, lay a sheet of newspaper over the leaf and hold it down with the palm of the hand, using considerable pressure. After a moment or two take the newspaper away and with a cotton cloth rub off the excess paste which will have exuded from under the edges of the leaf. Proceed in the same manner with the left-hand leaf, and so on until all the leaves have been ad-



MOUNTED SAMPLE OF TALL LUNGWORT (*MERTENSIA PANICULATA*)

hered to the cardboard, leaving the flower-head or heads until the last. Place each flower head in its natural position, note the space each occupies on the cardboard and smear paste on each spot. Then press the flower-

heads down, rub off all excess paste from the whole plant, place the prepared specimen on a table. A label describing the plant specimen should be adhered with paste to the lower right hand corner of the cardboard. The label should be about 4 x 2.5 inches and should state the following facts:—Order, scientific name, common name, habitat, locality, date of collection, collector's name.

After a few minutes, when the

The plants are left in the press until the following day, when all the newspapers should be removed and dry ones put in their places. The newspapers should be changed on three or four consecutive days and then the plants may be put away in the herbarium or cabinet.

Each pupil will be able with the guidance of the teacher to procure and mount the plant specimen as outlined in about one hour and a



DISPLAY CABINET FOR MOUNTED SPECIMENS OF
WEEDS AND OTHER PLANTS

paste is so set that it will not adhere to any foreign substance, place a folded newspaper over the whole mount. Each pupil of the class should do likewise and then the prepared specimens should be placed in a pile one above the other, with an inch board 12 x 14 inches at the bottom and a similar one at the top. A number of bricks acting as a weight should now be placed on the top board.

half. Hence in one period with a class of forty pupils at least forty prepared specimens may be obtained. If a teacher has a few such periods in the spring and fall of each year, then in the course of a few years the school will be provided with a large number of plant-specimens which I am sure will be a credit to the school.

After the plant specimens have been obtained there should be some method of displaying them without

exposing them to sunlight for any length of time, because sunlight tends to bleach out the natural colours of the flowers and leaves. The method of displaying should also prevent unnecessary handling as the cards should be kept as clean as possible, and in handling plant-specimens there is always danger of their falling and becoming soiled or broken. Taking these points into consideration, I think the best method of displaying the plant specimens is to have them attached by thumb-tacks to wooden frames of a cabinet, the frames resembling the leaves of a book. This cabinet can be so constructed as to accommodate about a dozen frames, which may be opened up like the leaves of a book, and so that each frame of the cabinet may be taken out if necessary. The cabinet may be about eight or nine feet

high and six or seven feet wide, provided with two doors meeting in the centre of the cabinet.

Within the cabinet the plant specimens should be arranged according to the families to which they belong and the plants of each family should be alphabetically arranged according to the first letter of the genus to which they belong. This will make it easy to find a certain plant at any time. If the number of plant specimens is large it will be necessary to have perhaps two or three such cabinets. The Superintendent of Weed-inspectors for the province of Alberta has in his office three such cabinets, where the weeds and other common plant specimens are displayed. These have proved very satisfactory and the plants are still in perfect condition.

NORMAL SCHOOL SCIENCE DEPARTMENT

BY J. R. TUCK, M.A., CAMROSE, ALTA.

IT can scarcely be said that anything like a generally uniform system of managing plant and other collections has been adopted throughout the province. Obviously there are difficulties, in many parts, in the way of building up exhibits even for ordinary reference, when so many schools are just newly opened and so many teachers stay in the same school so short a time. Pupils, however, are encouraged by many to make collections for themselves as well as to add to a common school collection.

In the schools here attempt is made to observe good botanical practice in so far as this can be managed successfully by public school pupils. The collections made to the greatest extent are: plants common to the locality with special reference to noxious weeds in the senior grade; leaves and twigs of trees; weed seeds; seeds showing dispersal structure, and insects.

The plants to be preserved are chosen and arranged so that when

pressed they will show as completely as possible all the characteristics of that species and hence flower, roots, stem and leaves are needed, entire or in part. They are pressed between boards or slats on which is put a weight great enough to flatten the specimen well. Each plant is placed between several layers of absorbent paper such as blotters or old newspaper to absorb the juices squeezed out, and a considerable number can be pressed at the same time. Care needs to be taken to put them in a place where they will dry quickly and, to assist in this, the absorbent paper should be changed two or three times during the first week. When flattened and dried well (usually in a week or ten days if everything is favourable), the specimen is mounted on regulation-sized paper. One fairly stout sheet of white paper $11\frac{1}{2} \times 16\frac{1}{2}$ inches is used for each specimen, which is held in place by several narrow straps of adhesive tape, such as passe-partout, placed across the stem. A label

showing the name of the plant, the name of the collector, date, etc., is attached by one edge to the lower right-hand corner of the sheet. Each specimen is exhibited by pinning to a bulletin board or a substitute for this. When not being exhibited all the specimens of a family are placed together in a simple folder made of stout paper, such as wrapping paper, folded over once. The sheets are placed loose in this and kept in cupboards or drawers.

The two commonest ways of keeping and displaying weed seeds are:

1. By putting each kind, when ripe, in a small vial which is labelled and mounted on a cardboard. They

are held there by elastic string, cord, or narrow ribbon, very much after the fashion adopted for keeping buttons on cards.

2. By causing the seed to adhere to a cardboard with the aid of mucilage, etc. So that these will not be rubbed off so readily they are guarded by a disc of cardboard—square or round.

Seeds showing dispersal structures are best put in small vials. All should be ripe and dry, or else they will spoil. These cardboards can readily be pinned to bulletin boards. In many places prizes are offered at fall and summer exhibitions for such collections as these.

NATURE STUDY IN SCHOOLS

BY A. KENNEDY, M.A., INSPECTOR OF SCHOOLS

IN the Nature Study Review, March, 1915, the Editor takes the opportunity to direct attention to the fact that "It was the unanimous opinion of those present at the December meeting of the American Nature Study Society at Philadelphia that no other matter is now more important in the nature study movement than the formulation of proper plans of organization for nature study materials for school use, and the lucid statement of the principles of methods to be used in presenting such materials." This issue of the Nature Study Review presents a full statement of the course in vogue in the Mankato, Minnesota, Normal School.

The retiring president, in her address, traced the Nature Study movement from its source, in 1862, to the present. "In reviewing the progress of Nature Study in the schools, we may be reassured, because the phases through which it has passed successfully are enough to have proven its robust qualities. Co-incident with the toy science made over from the university laboratories came what has been aptly termed the cute and fluffy

stage, which resulted from the impact of the Nature Study idea upon the imagination and enthusiasm of those teachers trained in pedagogy, but utterly untrained in science. This resulted in an effervescence that frothed over and soon dampened and rendered soggy the Nature Study section of the school curriculum. Now normal schools and teachers' courses in the university summer schools give the teacher the needed training and we can even see the prophecy fulfilled which L. H. Bailey made twenty years ago, when he said: "Nature Study is not science. It is not knowledge. It is not facts. It is spirit. It is concerned with the child's outlook on the world. Nature Study will endure because it is natural and of universal application. Methods will change; here and there it will be smothered; now and then it will be over-exploited; with many persons it will be a fad. But the spirit will live."

The growing importance of school gardening in relation to Nature Study and, in general, to the school curriculum is evidenced by the increasing attention devoted to school

gardening in the Nature Study Review, as well as in the various courses of the normal schools.

The most notable recognition of the school garden movement during 1914 has been the establishment of a department of school gardens by the United States Bureau of Education. It is not only an official recognition, but a commanding endorsement.

The greatest factor in the success of school gardening is the personality or individuality of the teacher. The teacher's interest will determine the garden. Local conditions will be contributing factors. But there can be no one model garden. A factor of secondary importance is the making of the garden an integral part of the school work in order that the spirit may create a new and natural interest in the other subjects of the course. The school garden of Souris School, Weyburn, 1914, provided in its government by a Municipal Council, elected from and

by the pupils, excellent material and information re the subject of civics. By reason of the fact that the plan of the garden represented the survey of the province, opportunity was afforded of presenting much useful information that class-room teaching usually finds difficult to present effectively in geography. In fact, the principal found this opportunity most helpful. Problems of administration arose which furnished valuable problems in arithmetic, not only for the councillors, but also for the pupils: in fact, the garden provided a text-book in arithmetic. Considerable material was also made available for other subjects of the course—material of such vital interest to the child that one recalls Tennyson's

"Flower in the crannied wall,
I pluck you out of the crannies,
I hold you here, root and all, in my hand,
Little flower—But if I could understand,
What you are, root and all, and all in all,
I should know what God and man is."

Victory in the present great war depends not more upon "the man with the rifle" than upon "the man with the hoe". The soldier's duty is to destroy the enemy; the duty of the tiller of the soil is to feed the friend. It is the "man with the hoe" who must keep the man with the rifle on the firing line. The battlefield, seared with trenching tools, must be backed by the field trenched with furrows. Fields bristling with ripening grain must re-inforce the trenches bristling with bayonets. Reaping machines must hum if howitzers are to roar. It has been estimated that it requires the services of three men to keep one soldier on the firing line. One of these three must till the soil. --

The Toronto Telegram.

A very large part, perhaps the largest part of these armies, have been called from agricultural occupations; only the women and children and the very old are left in the warring countries in Europe to till and harvest as best they can. It is towards the middle and latter end of this year that those who have thought most over this question look with painful apprehension. They fear, nay, they are certain of a shortage in the food supply of the world. It will be too late then to think of remedial measure. Whatever must be done to prevent disaster or to relieve it of its worst terrors and make it bearable must be done now. Food cannot be created in a day or a week the way coal can be dug out of the earth, or oil drawn from the wells. Meat and wheat, butter, fruit, vegetables, all must be prepared in anticipation many months beforehand, or years beforehand in the case of cattle.—From "*The Irish Homestead*."

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

CO-OPERATIVE CREDIT BANKING

ON page 358 of the fifth number of the GAZETTE is given an account of the Caisse Populaire, or People' Credit Bank, established through the instrumentality of M. Alphonse Desjardins, C. B., at Point Levis, Que., in the year 1900. In that number are given the principles that govern the bank and which show that the main asset of the institution is the sobriety, honesty and industry of the shareholders, for without holding a share no opportunity can be taken of the privileges, the foundation and maintenance being entirely based on co-operation. History narrates that many efforts have been made at organization seeking to accomplish the object aimed at by this system of banking, but that they have usually failed for the lack of mutual confidence, or because the guiding influence has been the accumulation of profit. By the plan adopted by M. Desjardins this latter idea is eliminated and shareholders are brought to recognize that affairs are conducted solely for the benefit of themselves, their neighbours and acquaintances, who must all have their work-a-day world within the provincial electoral district within which operations are strictly confined.

ILLUSTRATIONS OF SUCCESS

Eight years elapsed before M. Desjardins and the gentlemen associated with him were convinced that the system adopted at Levis was a success. After that, all doubt being removed, the establishment at different points of similar banks was encouraged, with the result that today the number exceeds one hundred and fifty. The progress made on the one hand, and the success achieved on the other, is best illustrated by a few quotations from a pamphlet written by M. Desjardins and published last August under the auspices of the Division of Remedial Loans of the Russell Sage Foundation of New York.

The Levis People's Bank, the initiatory

institution, completed its fourteenth year on the 30th November, 1914. At that date the general assets amounted to \$350,728.38; 7,228 loans had been made reaching to a total of \$1,566,316.94, and the shareholders numbered 1,228 at five dollars per share. Dividends amounting to \$29,545.61 had been paid at the rate of five per cent. A reserve fund of \$19,113.00 had been created, and \$7,480.30 paid in interest. The loans current amounted to \$197,050, and the sum in bank was \$30,192.53. Three-fourths of the loans did not exceed \$200, the largest proportion being between ten and fifty dollars, and not a cent had been lost. In the fourteen years the general turn over had been \$2,377,022.90.

Most of the banks show a proportionate development of business. Founded in January, 1909, in three years the co-operative bank of St. Sauveur had a turn over of \$57,334. The Quebec East People's bank in thirty months had assets of \$12,893.19, had loaned \$21,780.69, and showed a turn over of \$32,163.32. The oldest people's bank in Montreal, that in the parish of the Immaculate Conception, at the end of two years had assets of \$20,867.45, and the turn over was \$111,272.00. In Three Rivers the bank was organized October 17, 1909, and on January 31, 1913, had assets amounting to \$43,280, had loaned \$49,794.40, had handled \$64,266.34 of deposits, and had a turn over of \$104,959.70 at a total working expense of only \$135.81. Matane, Rimouski, has a bank that in 18 months had a turn over of \$11,302.80 and assets of \$4,766.26. In Ottawa the People's Bank of Ste. Anne for nine months' operation had a turn over of \$10,355.97 and assets of \$5,415.51. In the parishes of St. Gregoire and St. Louis de Courville, the chief residents of which are employees of the Montmorency Falls Cotton Mill, there are banks, each of which in the course of a year

had become firmly established, the bank of St. Gregoire having assets of \$7,000, and loans of \$5,000 and a turn over of \$35,000, while that of St. Louis de Courville had assets exceeding \$11,000, and loans of \$6,680. The foregoing are instances of successful operation in urban and labouring districts.

FARMING COMMUNITIES AND SETTLEMENTS

Turning to farming localities, where conservatism in financial matters is probably at its height, it is found that in St. Ulric, a parish in the county of Rimouski, on the shores of the St. Lawrence, one of these banks in thirty-seven months had accumulated assets of \$24,460.38, had made loans of \$73,530.05, had paid \$632 in dividends and \$562 interest on deposits, and had transacted general business to the extent of \$116,817.86. In Armagh, county of Bellechasse, with a population of 1,400 farmers to St. Ulric's 1,600, the bank in thirty-four months had accumulated assets of \$27,183.23, and had a turn over of no less than \$356,686.03 at a total expense of \$173.49, the loans reaching \$37,643.58. This was up to December 31, 1912. On May 31, 1914, the assets had swollen to \$79,749, the turn over to \$568, 653 and the loans to \$123,060, the expenses in connection with these increases being only \$52. In thirty-nine months the parish bank of St. Maurice of Champlain had a turn over of \$424,000 and assets of \$54,000. This in a parish with a population not exceeding a thousand. In Maria, County of Bonaventure, a parish of about 800 souls, at the end of four years the bank had assets of \$20,485.06 and had reported a general business of \$49,294.36, of which \$29,625.91 was in loans. In smaller parishes on a smaller scale similar results have been achieved.

In mining centres and among settlers, like information regarding these institutions is forthcoming. At Thetford Mines, the famous asbestos mining centre, in rather less than four years assets of \$30,000 and a general turn over of \$100,000 were recorded. At Black Lake, a much smaller locality, the bank had made loans of \$9,143.82, and had a turn over of \$12,000. In St. Damase of Matane, a settlement of 700 souls, in twenty-six months the bank boasted a turn over of \$25,356.78, and assets of \$6,900, while the loans granted amounted

to \$14,140.18. St. Martin, in the County of Beauce, a settlement of a like character, had such a bank, the total business of which in twenty-five months reached \$92,417 and the loans to \$43,092. In several places the Indians had shown a marked and active interest in the bank.

BENEFITS CONFERRED

Incidents illustrating the benefit conferred by the banks are many. In one case a widow borrowed \$28 to pay for a sewing machine that by weekly payments would have cost her \$45, and by operating which she made her living. In another a settler lost his horse, but, being a shareholder in the parish bank, borrowed a small sum to buy another and speedily repaid the loan out of his labour in the lumber woods. An Ottawa man with seven children borrowed \$500, started a shoe shop and at the end of the year had nearly wiped out the score with regular monthly payments. A poor woman of Levis, 75 years of age, had carried a mortgage on her house of \$432 for twenty-nine years. She borrowed the amount, paid \$2.50 a week in return, and in fifty months was clear of debt, the amount of interest being only equivalent to $3\frac{1}{4}$ per cent. A farmer borrowed \$240 to pay cash for implements that would have otherwise cost him \$295, and in a few months had repaid the loan. It is hardly necessary to multiply these illustrations, as they only repeat the oft-told tale of the value of ready cash, such as these banks supply to their shareholders.

THE MANAGEMENT

The *modus operandi* is simple. Each association, or bank, is carried on by three unremunerated committees, chosen from the shareholders, namely, a council of administration with from five to nine members, a credit committee of three members and a supervisory committee also of three. The members of the credit committee must be unanimous in granting a loan and cannot themselves be borrowers. The shares of five dollars can be paid in instalments, involve no liability, and are withdrawable. The Council of Administration passes on new applicants for shares, and has a general eye to the business, while the supervisory committee constitutes a permanent board of supervision and audit.

The Northern State Bank of Iowa has offered \$150 in five prizes for the best crops of alfalfa grown by citizens of Sioux county, that state. Competitors must be either a depositor or borrower of the bank. Bankers of the same country are offering a free trip to Panama for the boy who produces the best yield of corn on any one acre.

SASKATCHEWAN LIVE STOCK REPORT

The report of the Saskatchewan Live Stock Commission, appointed last November to look into the condition of the live stock industry in the south-western portion of the province, has been prepared. In making the report the commissioners dealt more particularly with such questions as "the period of year during which animals should be restrained from running at large," and "the location, equipment and administration of pounds." The Commission held sittings at 16 points throughout the district.

A number of recommendations were made, among these being the following:—

"That municipal councils continue as at present to fix the period of the year during which animals shall be restricted from running at large within the respective municipalities and to provide pounds, appoint pound-keepers and generally be responsible for the administration of the by-law dealing with these matters.

"That a uniform standard 'herd' by-law be drafted (along general lines of Parts 1 and 2 of The Stray Animals Act), leaving to the respective municipal councils only the following matters:

(a) The fixing of the period of the year,

if any, during which animals shall be restrained from running at large;

(b) The locating of pounds and appointment of poundkeepers; and that this uniform standard by-law be approved by the legislature and its completion and enactment by every municipal council made compulsory.

(c) That the provisions of each such "herd" by-law be uniform over the entire municipality to which it applies (i.e., that it be not possible for a council to provide for herding during the summer months in one township, herding throughout the year in another, and free range throughout the year in a third).

"That the standard by-law contain a section prohibiting the running at large of any stallion or bull of breeding age at any time, and that The Stray Animals Act be amended to the same effect.

"That provision be made in the standard by-law for some simple method of arbitrating the amount of damages claimed, provided the amount is disputed as being excessive; each party concerned to deposit 10 per cent of amount in dispute, with a minimum of \$5 and a maximum of \$20, the loser's deposit to be forfeited to meet expenses of arbitration."

VACANT LOT GARDENING

THE vacant lot garden work in Regina, described by Dr. W. W. Andrews in the February number of THE AGRICULTURAL GAZETTE, has made satisfactory progress. Before the end of April 538 lots were taken up, and it was expected that the 600 mark would be passed before the planting season closed. Dr. Andrews in writing concerning this work states that "the Bureau of Public Welfare is planning to take two blocks of lots for the use of families that they have had to help. They will advance them the seed, which we shall supply, and pay for the plowing of their lots. The Bureau will hold their leases and expect to be recouped when the garden stuff is ready to be sold. In most cases the Bureau may take it off their hands at a valuation and credit the gardeners with it, for their winter supplies."

Dr. Andrews states that "general interest in gardening is increasing all over the city. There will be about 2,000 more gardens in the city than last year. Many back lots are being dug up which were never cultivated before. Many of the best citizens

are taking vacant lots to supplement the home garden in the back lot."

Again referring to the use of cotton instead of glass for covering cold frames and hot beds, Dr. Andrews says, "Glass has its uses. But many of our gardeners leave home in the morning, which may be cloudy, clearing up by nine o'clock and our hot sun is apt to raise the temperature too high. Cheesecloth quilted double by sewing across every twelve inches is preferable. It is like ventilated underclothing, open but warm on account of imprisoned air. Hard cotton is of little use, or rather of less use than one more open. We are simply using the same protection and means of ventilation which is making the cotton window so satisfactory in some of the public schools, and in sleeping rooms during the winter. I hope many will try the new device. The plants are very hardy, and stand transplanting well. The cost of cotton is so low that one can afford to have a large area of cold frames and hot beds for melons, squash, tomatoes and bush beans and protect them from autumn frosts."

THE ALBERTA RURAL DEVELOPMENT LEAGUE

THERE has been formed in the province of Alberta an organization for the purpose of improving the industrial enterprises of the province. At a convention held at Olds about the middle of March, the following report and recommendations made by a committee previously appointed, were adopted.—

That an organization be formed to be called the Alberta Rural Development League.

That the officers of the league consist of an honorary president, a president, three vice-presidents, a secretary, and a treasurer.

That an executive committee consisting of the above officers and six other members be elected.

That the members of the league be those persons who are interested in its objects and, who shall be admitted to membership by form to be prescribed by the executive committee.

That the membership fee shall be \$1 per year.

That this convention elect officers of the league, except the secretary and treasurer, and also the executive committee, to hold office until their successors are elected.

That the incorporation of the league; its organization into a working body; and the entire management of its affairs, be vested in the executive with power to add to their number and to the objects of the league as set forth below.

- (a) That the objects of the league shall include: To secure the co-operation of all who are, or who may become interested, in the development of the farm lands of Alberta, in organized work for such development.
- (b) To advertise the agricultural resources of the province of Alberta.
- (c) To bring home-makers into the province and locate them on the land in the best places for their several purposes, giving them reliable information and securing for them the cheapest and best land to be had.
- (d) To effect a distribution of the population of the province so as to place a proper proportion of the people on farms.
- (e) To bring land at present unproductive, under cultivation; this to have particular reference to lands in, or near, cities and towns.
- (f) To secure a better system of agricultural credits.
- (g) To facilitate the transportation and marketing of farm products.
- (h) To extend education along agricultural lines and promote the general betterment of farm life, social, educational and economic.
- (i) To bring about a condition that shall do away with the present large importation of agricultural products which the province is capable of producing.

SOCIETIES AND ASSOCIATIONS

HOLSTEIN BREEDERS' CLUB

The Waterloo County Holstein Breeders' Club was organized recently at a meeting in Berlin, Ontario.

The objects of the club is the advancement of the general interests of the Holstein-Friesian by the holding of public sales at auction; by encouraging the entry of cows and heifers in the advanced registry, and the weighing and testing of milk from the whole herd, discussion of the best methods of breeding, rearing and exhibiting and raising the standard of excellence of the breed by bringing before the public the good qualities and exceptional merits, and in other ways to generally widen and extend the interests of this breed of cattle.

The officers and directors appointed for

this year were as follows: President, A. C. Hallman, Breslau; 1st vice-president, And. Zoeller, New Hamburg; 2nd vice-president, Anthony Gies, Waterloo; secretary-treasurer, Wm. Rife, Hespeler. Directors—Warren Bean, New Hamburg; Irwin Shoemaker, Berlin; H. Knell, Berlin; Wm. Douglas, Galt; John Howling, New Dundee; D. B. Hoffman, Hawkesville; Henry Beckner, Elmira; Herbert Groh, Preston; Allan Shantz, Waterloo; H. Ludolph, New Dundee. Auditors, Irvin Hallman and Titus Kolb.

PRESERVATION OF BIRD LIFE

A branch of the Audubon Society for the Preservation of Bird Life, for the province of Manitoba has been organized in Winni-

peg. At the organization meeting, which took place on April 5, it was proposed, and generally approved, to form numerous classes of ten school children each, headed by a teacher, each pupil to be required to subscribe ten cents and to receive regularly the magazine "Bird Lore", published by the Audubon Society with headquarters at New York. Each member of the club would receive also a club button.

It was announced at the meeting that there is pending a treaty between the United States and Canada, having for its object the preservation of the life of migratory birds passing back and forth between the two countries. The treaty, it was stated, had been signed for each province in Canada, except British Columbia, which province was expected to sign the treaty at an early date.

The following were the officers elected:

President, Manlius Bull; hon. president, Rev. Dr. Salton; vice-president, Dr. W. A. McIntyre; second vice-president, G. H. Bartlett; third vice-president, H. A. Speechly; secretary, J. B. Wallace; assistant secretary, W. E. Grant; treasurer, Mrs. Percy Anderson.

Executive Committee: Mayor Waugh, W. J. Bulman, V. W. Jackson, J. W. Goulden, Norman Criddle, T. M. McGuire, Rev. J. W. Little, F. B. Wallis, W. G. Scott, C. A. Rowley, Dr. Gordon Bell, Dr. J. Bond, Prof. Trigerson, Daniel McIntyre, Hon. G. R. Coldwell, Mr. McPherson, B. J. Hales, and Mrs. C. P. Walker.

PRINCE EDWARD ISLAND EGG AND POULTRY ASSOCIATION

The second annual meeting of the Prince Edward Island Egg and Poultry Association was held at Charlottetown on April 20th and 21st. There are now 62 established circles in Prince Edward Island, each of which was represented at the conference by one or two delegates.

The following statements will show the steady increase in membership and the business transacted by the association.

Approximate membership of twenty egg circles shipping March 18th, 1914:—1,100.

Approximate membership of sixty-two egg circles shipping, March 31st, 1915:—5,200.

STATEMENT OF BUSINESS TRANSACTED

Business transacted January 1st, 1914 to March 31st, 1915:—

No. doz. collected (42 circles)	
actual.....	921,264
No. doz. collected (19 circles)	
estimated.....	289,645
Total, doz.....	1,210,909

Gross value of eggs collected...	\$279,114.60
Average net price per doz.....	.22
Average cost of collecting, per doz.	1 05

The above statement represents in many cases only seven or eight months' business.

Some of the benefits accruing from this form of co-operation are:—an opportunity is presented to the farmers by which they may reap just returns for their labour; the keeping of better strains of poultry, and increased production are encouraged; Prince Edward Island eggs have become popular in the Boston and Montreal markets, more especially since the establishment of candling stations.

The following resolutions were passed at the annual meeting:—

RESOLVED: that it is the opinion of this convention that the Federal Government be asked by the Central Association to take the necessary steps to have such legislation enacted as will tend to protect the quality of eggs exported by this Association. We would urge that the Legislature would set standards or classes by which eggs placed on the market will be known, and persons selling those eggs must clearly indicate which class they come under.

RESOLVED: that the various egg circles should send all eggs to the Central Candling Station.

ALBERTA PROVINCIAL POULTRY ASSOCIATION

The executive committee of the Alberta Provincial Poultry Association met in Calgary on April 2nd.

The desirability of fostering the infertile egg business was the subject of a communication from the Swift-Canadian Co., Ltd., and it was decided that the provincial government be requested to take steps looking to the production of more of this class of egg, and that an article on the advantage of producing an infertile egg be incorporated in the poultry bulletin now being compiled.

Action on the part of the association looking to an improvement in conditions in the marketing of poultry and its products was requested by H. Perry, President of the Gadsby Poultry Association. It was pointed out that the Provincial Government had secured cold storage facilities in Edmonton and Calgary and was prepared to enter into an agreement with egg circles or associations to handle their eggs on a co-operative basis, and the letter was therefore referred to the poultry superintendent.

It was decided to make an endeavour to arrange for a meeting of representatives of the provincial associations of the four western provinces with a view to the formation of a Western Canada Poultry Association.

The Farm and Ranch Review was named as the official organ of the association.

It was decided to request all members to include in their advertising the words "Members of Alberta Poultry Association."

SASKATCHEWAN CO-OPERATIVE ASSOCIATION

The report of the first complete year of the Co-operative Organizations branch of the Saskatchewan Department of Agriculture shows that 102 of the associations, the returns from which had been received, had a total of 21,850 shareholders with a paid up capital of \$13,494.20, assets of \$37,337.33 and a total liability, including capital, of \$29,717.33. The average amount of authorized capital is \$6,843.13, and the shares have an average par value of \$23. Seventy associations engaged in co-operative purchasing of farm supplies; three confined their operations to live stock; six combined live stock dealing with other lines of business, but 29, owing to the prevailing conditions, were inactive during 1914. The total value of farm supplies handled was \$239,320.42, and of live stock sold \$42,034.22.

THE SASKATCHEWAN NATURALISTS' CLUB

The Saskatchewan Naturalists' Club was organized in 1912 for the purpose of making a systematic study of the Natural History of the province. When organized the club consisted of about eighteen teachers. At present there are forty members about half of whom are outside of the teaching profession.

The policy of the Saskatchewan Naturalists' Club might be outlined as follows:—

To encourage the study of natural history in the schools,

To build up, and eventually publish, a Saskatchewan flora,

To record the introduction of new plants and insects into the province,

To keep a record of the insect pests,

The co-operation of the different members in building up the provincial museum at Regina,

To get in touch with similar organizations in other parts of the Dominion with the view of exchanging specimens, etc.,

To publish an annual report.

As yet there is no regular publication of the Saskatchewan Naturalists' Club. Each month, however, a certain portion of the *Saskatchewan Farmer* under the heading "Natural History Department" is taken up with articles written by the members.

The first annual report is in the press at present, the publication of it being undertaken by the Department of Agriculture.

The secretary of the club is Geo. S. Johnson, B.A., Collegiate Institute, Moose Jaw, Sask.

HOLSTEIN-FRIESIAN RECORDS

For the last half of March reports of the official tests of 86 Holstein-Friesian cows and heifers were received and entered in the Record of Merit by the secretary of the Holstein-Friesian Association, Mr. W. A. Clemons. Helena Pauline Korndyke leads the mature cows with 29.97 lb. of butter from 733 lb. milk, best day's milk, 111.5 lb. This gives Helena Pietertje's Pauline two daughters that have produced over 110 lb. milk in one day, an achievement that Mr. Clemons thinks no other Canadian cow can claim. Royalton Canary Queen, Francy 4th, Ladysmith Calamity and Lady Woodcrest Paxton all make over 27 lb. butter, and all these except Francy 4th have given over 100 lb. milk in a day. The best of the senior four-year-olds is Oxford Jewel DeKol Francy with 23.47 lb., while the juniors are led by Pride Hengerveld Lennox with 29.63 lb. butter. Francy Belle Wayne stands highest among the senior three-year-olds, making 29.20 lb., in a week. Calamity Snow Mechthilde after making 722 lb. butter last year in the Record of Performance comes in the lead of the junior three-year-olds with 24.45 lb. butter. Colony Birdie Ormsby is the best senior two-year-old with 20.02 lb., while first place in a big class of juniors is held by Madam Pauline Canary 2nd, with 17.46 lb.

THE CANADIAN FLAX ASSOCIATION

There was recently held at London, Ontario, a conference of flax growers and dealers and of owners of flax mills. After discussing the present situation, the new conditions brought about by the great war, and the demand for increased production, it was decided to form an organization to be known as The Canadian Flax Association.

The following officers were elected:

President, Mr. George H. Campbell, Toronto. (President of Canadian Flax Mills, Limited.)

Vice-president, Mr. G. Howard Fraleigh, Forest.

Secretary-treasurer, Mr. A. L. McCredie, Toronto. (President of the Ontario Flax Company.)

Executive Committee, the president, vice-president, secretary-treasurer and the following: Messrs. William Forester of Mitchell, Owen Greiger of Hensall, Amos Tipling of Wingham, T. A. G. Gordon of Sarnia, and A. M. Kerr of Doon.

The Executive Committee were instructed to confer with the Dominion Government and to advise as to the means best adapted to promote the industry.

The president, Mr. George H. Campbell, gave the flax millers a description of the new process of handling flax at the mill recently erected by his company at St. Catharines.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

Orders Respecting Foot and Mouth Disease, Imports of Animals, etc. This is a circular over the signature of the Deputy Minister of Agriculture explicitly detailing the orders that came into force on May 9th, 1915, regarding the admission of horses, dogs, sheep and lambs (for immediate slaughter only from the states of Idaho and Washington), cats, pet birds, wild animals, poultry (alive or dressed), hay or straw, provisions, meats, lard, tallow, butter, milk, cream, hides, pelts, wools, hair and feathers. These orders replace those of the 9th day of November, 1914, under the Animal Contagious Diseases Act, and the amendments thereto.

A neatly printed cardboard, 9 x 14 inches, has been issued by the Department of Agriculture giving the standards for Canadian Eggs adopted by the Third Annual Convention of The Canadian Produce Association, Guelph, January 11th and 12th, 1915. The cardboard is intended for hanging in storehouses and shipping offices. As the contents have already appeared in the GAZETTE, (page 226, Vol. 2, No. 3, there is no need to repeat them here, nor to impress their importance upon all interested in the poultry business.

Foreign Agricultural Intelligence, March, 1915, issued from the office of The Canadian Commissioner of the International Institute of Agriculture. The leading features are "The Control of Plant Diseases in Sweden, an original article by Prof. Jakob Eriksson, Stockholm, from which much valuable and interesting information can be gleaned; "Overhead System of Irrigation," "Duration of the Action of Manures," "Alfalfa Hybridization," "Experiments with Autumn-sown Crops in Ontario," "Preventive Inoculation against Sheep and Swine Pox," "Preparation of Ensilage," "Quality in Wool," "Flax Growing," "Belgian Refugees and English Agriculture," "Substitutes for Oats in Feeding Farm Horses." Comparative tables of imports and exports of cereals, of prices and of production add to the interest of the number.

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF CHEMISTRY

Manure and Fertilizers, by Frank T. Shutt, M.A., D.Sc., Dominion Chemist. This is Circular No. 8 of the Division of

Chemistry. It comprises eight pages of useful advice founded on actual experience. It describes the value of different fertilizers and the manner in which they can be most profitably applied.

THE DIVISIONS OF HORTICULTURE AND AGROSTOLOGY

Growing Field Root, Vegetable and Flower Seeds in Canada, by M. O. Malte, Ph. D., Dominion Agrostologist, and W. T. Macoun, Dominion Horticulturist. This is Bulletin No. 22, Second Series. In presenting it Director J. H. Grisdale, of the Dominion Experimental Farm, explains that as the importation of seeds from Europe on the scale that has hitherto prevailed will be impossible during the duration of the war, it is hoped that the Bulletin, including as it does quite comprehensive instructions as to how to go about growing these seeds in Canada, will prove helpful to many and act as an inspiration to others to try a small plot themselves. Canada is urged to make herself independent of foreign markets by producing at home what now has to be brought from abroad.

THE DIVISION OF BOTANY

The Control of Potato Diseases, by H. T. Güssow, Dominion Botanist, being Circular No. 9 of the Division of Botany. This Circular gives particulars in detail of the value and uses of preventatives of diseases of potato. By following the suggestions herein set out farmers will increase their yield, improve their land and increase their profits.

THE DIVISION OF HORTICULTURE

Summary of Results, Horticulture, 1914, Bulletin No. 82, of the Division of Horticulture; prepared by W. T. Macoun, Dominion Horticulturist, and Superintendents of the Branch Farms and Stations. This is a story of experiments and results not only at the Central, but at the farms or sub-stations in every one of the provinces of the Dominion. The publication is replete with information on the cultivation of every variety of vegetable, every variety of fruit, and many orders of plants and flowers, in all parts of the country, in many kinds of soil and under divers conditions. It is a comprehensive Bulletin of 88 pages that is deserving of wide circulation and close study.

THE ENTOMOLOGICAL BRANCH

The Control of Locusts in Eastern Canada, by Arthur Gibson, Chief Assistant Entomologist. This is Circular, No. 5, of the Entomological Branch. When the locust becomes plentiful, it is one of the most destructive pests known to agriculture. For this reason this circular, telling how to deal with the plague when it arrives, and which can be had on application to the Publications' Branch, should be in wide demand. Mr. Gibson in his introduction explains that during the years 1912, 1913 and 1914 locusts were extremely numerous and destructive in the provinces of Ontario and Quebec and instances a district in Lanark county where 75 per cent of the crops were destroyed and damage done to the extent of \$6,000.

The Army Worm (Cirphus-Leucania-unipuncta Haw) by Arthur Gibson, Chief Assistant Entomologist; Bulletin No. 9 of the Entomological Branch. At the outset this 34-page bulletin indicates the importance of the subject it treats. Than the army worm there is hardly a more persistent, prolific and destructive pest. It is estimated that last year this worm inflicted a loss of a quarter of a million dollars on the province of Ontario alone. Other provinces suffered, but not to so large an extent. Mr. Gibson describes the inroads made by the pest, its onward march, its description, its habits, its breeding places, methods of identification of its approach and the manner in which it can best be dealt with. The bulletin is distinctly and definitely illustrated.

THE SEED BRANCH.

An Inquiry Regarding the Wheat, Oats, Barley, Flax and Ensilage Corn used for seed in Canada, by Edgar D. Eddy, B.S.A., Chief Seed Inspector. This is Bulletin No. S 9 of the Seed Branch. In his introductory letter to the Minister, Mr. George H. Clark, Seed Commissioner, explains that "The main object of this inquiry was to ascertain the common practices of farmers in representative localities in each of the provinces. The data obtained is interesting and even surprising." The inquiry was instituted in the spring of 1913 and continued in 1914. Seed inspectors were instructed to visit farmers and procure samples of seed actually being put in the ground. Over 3,700 samples were forwarded to the seed laboratory, where they were tested for purity and germination, with the results detailed in this 32-page Bulletin.

PROVINCIAL DEPARTMENTS OF AGRICULTURE AND OF EDUCATION

PRINCE EDWARD ISLAND

The annual report of the Department of

Agriculture for the year ending 31st December, 1914, is prefaced by a page illustration showing the Directors of Agricultural Instruction in public schools. In his report the Commissioner of Agriculture, Hon. Murdoch McKinnon, states that the efforts of the department were directed during the year to the perfecting of the system of agricultural education previously inaugurated. This was undertaken jointly with the Superintendent of Education and the Principal of the Prince of Wales College. Women's Institutes have been organized in each county. Tribute is paid to the work of the Dominion Department of Agriculture, and to the useful purpose served by THE AGRICULTURAL GAZETTE. "No encouragement, local or federal", the report continues, "has been so productive of good as the grant provided under THE AGRICULTURAL INSTRUCTION ACT."

NOVA SCOTIA

The Rural Science Bulletin, edited by L. A. DeWolfe, M.Sc., Director of Elementary Education for Nova Scotia, under date of April 20th, 1915, points out that there are in Nova Scotia 110 teachers holding a rural science diploma or rural science certificate. Of this number 85 are making the necessary monthly report to the Department of Education, and have collectively subscribed for 22 different periodicals this year. Among these periodicals the *Educational Review* leads with 57 subscribers; next follows the *Canadian Teacher* with 19; *Bird Lore*, 10; *Nature Study Review*, 9; *Primary Education*, 8; *Guide to Nature*, 5; *Rural Education*, 3; *Garden Magazine*, 2, and a large number of periodicals have one subscriber each. In addition each rural science teacher is receiving regularly THE AGRICULTURAL GAZETTE OF CANADA.

In the annual report of the Superintendent of Education of Nova Scotia for the year ended 31st July, 1914, the expenditure for rural science is placed at \$9,315.35 taken out of the Dominion grant of \$61,247.87. The estimated value of the rural school libraries is \$5,896.40. Of the 102 students attending the regular course at the Nova Scotia College of Agriculture, 54 were from Nova Scotia, 27 from New Brunswick, 8 from Prince Edward Island, one each from British Columbia and Ontario, six from Great Britain, two each from Newfoundland and the United States and one from Belgium. The short course of two weeks held in January attracted 351 students. A short course in connection with the Women's Institutes had 51 students in attendance.

NEW BRUNSWICK

Report on Agriculture for the Province of

New Brunswick for 1914. In the opening pages chronicle is made of the disposition of the federal grant to the province of \$49,407.20. The Director of Elementary Agricultural Education shows an attendance at the Nature Study and Elementary Horticulture classes of 1,356 pupils. An increase is also reported of eleven schools in four counties.

The Animal Husbandman reports progress in all directions, except in the matter of sheep, the number of which has decreased owing to "dogs" and the "Fence Problem". To stimulate the sheep-breeding industry 50 pure-bred animals were imported from Ontario. The six poultry fattening stations established in the province have done good work in helping farmers to put their poultry on the market in good condition.

An increase in dairy products for the year is recorded, the quantity of butter produced being 170,000 pounds in excess of 1913. The increase of cheese was relatively small.

The Field Husbandman supplies information regarding co-operative experiments with alfalfa and fodder corn, showing some failures owing to unsuitable conditions. The report indicates the importance of pure seed selection and deals with the good work being done in conjunction with the department by the Canadian Seed Growers' Association.

A summary of the crops in 1914 shows that hay was a little below the average, that oats although not promising at first, ultimately turned out well, that wheat was heavier than in the previous year, that the dry weather affected buckwheat, that peas and beans were better than the average, that potatoes were 10 per cent above the average, that carrots, beets and parsnips showed improvement, that Swede turnips did well, that cabbages were 95 per cent of the average, that the dry weather affected the pastures, that apples were abundant, that plums were about the average, that strawberries were very short, the yield being below 40 per cent of the average, that raspberries and blackberries were a little below and that gooseberries and cherries made a splendid showing.

Pulverized Limestone. Circular No. 2 of the Soils and Crops Division of the New Brunswick Department of Agriculture is devoted to explaining the intended uses of the recently purchased pulverising plant. Agricultural societies and groups of ten farmers are invited to make use of the plant, providing that not less than fifty tons and not more than two hundred tons of stone are sent in.

QUEBEC

Report of the Minister of Agriculture, 1914. This is an extensive volume making 366 pages, not including detailed statements of receipts and expenditure on farmers' clubs account, on agricultural society account and of points awarded in agricultural merit competitions, as well as many full-page and half-page illustrations.

The Minister, Hon. J. E. Caron, notes that twenty-five new co-operative societies were formed from 1st July, 1913, to 1st July, 1914, including the Quebec Cheesemaker Co-operative Agricultural Society, which now has more than 1,300 members. The Minister traces the progress of agricultural education, narrates what has been done in promotion of the maple sugar industry, refers to the advance of stock breeding, and to the favourable prices received at public sales, to the progress in various branches of agriculture, and to the increase in farmers' clubs and agricultural societies. The sums paid to 30th June, 1914, on agricultural account amounted to \$483,541.61, apart from the federal subsidy of \$159,482.40.

Complete reports of all the divisions and districts are furnished along with lists of members and details of the proceedings of farmers' clubs and agricultural and co-operative societies.

Competitions in Standing Crops, for the Production of Seed Grain, organized by the agricultural societies of Quebec. In giving the reports of the judges, it is shown that the number of competitions increased from 18 with 171 competitors in 1908 to 67 with 1,023 competitors in 1914. Last year there were 45 competitors in oats with 691 entrants, 10 potato trials with 174 contestants, 4 competitions for seed clover with 40 competitors, 4 for Indian corn with 50 competitors, 3 wheat competitions with 48 contestants, and 1 each of barley and timothy with 10 competitors. The judges insist upon the necessity of treating seed-grain for smut before sowing. The remarks of the judges given at the foot of each result are of special interest.

ONTARIO

Care and Management of the Apple Orchard in the United Counties of Dundas, Stormont and Glengarry, by E. P. Bradt, B.S.A., District Representative of the Ontario Department of Agriculture for the counties of Dundas and Stormont. This publication, while professing to be only the result of observation in the counties mentioned, yet contains matters of vital interest to all sections of the country. It deals with the outlook, the sale, the nursing and planting, the management of young orchards, the bearing orchard, spraying, thinning, picking

and packing, marketing and results of demonstrations. One of these demonstrations shows a profit from $1\frac{1}{4}$ acres of \$273.74, or \$205.31 per acre. A list is also given of bulletins and books that the fruit-grower will find valuable.

Smuts and Rusts of Grain Crops, by J. E. Howitt, M.S.Agr., Professor of Botany and R. E. Stone, Ph.D., Lecturer in Botany, Ontario Agricultural College, Bulletin No. 229 of the Ontario Department of Agriculture. If this Bulletin does not tell all there is to know about the subjects of which it treats, it at least furnishes twenty-four pages of facts and conditions that should be of invaluable help to the farmer. The total yearly financial loss to the agriculturists of Ontario due to grain smuts is stated to be \$2,720,000, of which oats is credited with \$1,800,000, wheat \$640,000, barley \$200,000 and corn (grown for husking) \$80,000. Results are given of experiments in prevention and cure.

Farm Crops, Results of Experiments at the Ontario Agricultural College, by C. A. Zavitz, B.S.A., Professor of Field Husbandry and Director of Field Experiments, being Bulletin No. 228 of the Ontario Department of Agriculture. This is a Bulletin of 80 pages describing experiments in the cultivation of every sort of grain and root crop grown in the province of Ontario. Many interesting comparative and statistical tables are given, with illustrations, the whole forming a vast fund of information.

Ontario Pure Bred Live Stock Census. In addition to the returns previously noticed reports have been received from the District Representatives for the counties of Northumberland, Norfolk, Dundas and Stormont, Lennox and Addington, Welland, Halton and Frontenac. In each case the name of the breeder is given with his post office address and the number of aged animals, two or three years olds, one to two year-olds and under one year, according to whether male or female. Northumberland, for instance, has 618 Holsteins, 500 female and 118 male, 204 Shorthorns and 222 Ayrshires. Norfolk has 684 Holsteins, 180 Shorthorns, and 30 Ayrshires. Welland has 249 Shorthorns, 29 Ayrshires, 341 Holsteins and 176 Jerseys. Halton claims 238 Holsteins and 700 Shorthorns. Dundas and Stormont have 642 Holsteins, 232 Ayrshires. Particulars are also given as to the number in breeds of horses, sheep and swine but as the reports are still being received a summary of the total result is not yet possible.

Tenth Annual Report of the Ontario Vegetable Growers' Association, 1914. In this publication issued by the Ontario Department of Agriculture, Secretary-Treas-

urer, J. Lockie Wilson, in his report lends emphasis to the Dominion Seed Commissioner's warning that unless extra efforts are made in Canada to prepare seed there is likely to be a great shortage for next year. Mr. Wilson points out that in 1914, the Dominion imported 452,721 pounds of beet and mangel seed from France, and 448,022 from Germany. Other seeds and a large quantity of roots were imported from the same countries. Mr. S. C. Johnston, B.S.A., contributes a paper on "Celery Blight," the Dominion Horticulturist on "How to Grow One's Own Vegetable Seeds," Mr. A. J. Logsdail on "Breeding of Vegetables," and Professor W. R. Graham on "Poultry Raising in Connection with Vegetable Growing." Messrs. F. C. Hart and F. F. Reeves discourse or report on co-operative operations and J. E. Britton, B.S.A., describes "Vegetable Work" at the Ontario Agricultural College. An instructive and inspiring address by the Ontario Minister of Agriculture, Hon. J. S. Duff, is a feature of the report.

Corn Growers' Association, 1914, sixth annual report. Papers by Dr. G. C. Creelman, president of the Ontario Agricultural College, on "Some Rural Problems," in which the possibilities of the farm are dealt with; by Mr. L. H. Newman on "The 'roduction of Seed Corn of Types Required in Eastern Ontario and Quebec," detailing the results of experiments conducted in the Eastern Townships; by Professor C. P. Norgord, of Wisconsin Agricultural College, on "Corn Growing for Seed and Silage," detailing the feeding value of silage, the importance of alfalfa, the cultivation and curing of seed corn, and by Professor C. A. Zavitz, of the Ontario Agricultural College, on "Crop Improvement from the Farmers' Standpoint," dealing with underdrainage, rotation and varieties, and addresses by Hon. J. S. Duff, Minister of Agriculture, and Professor S. B. McCready, of the Ontario Agricultural College, delivered at the annual convention are the main features of the report, to which supplementary articles by Mr. Jack Miner of Kingsville, Ont., on "The Value and Intelligence of our Birds on the Farm" and by Mr. J. W. Purcell, Hydro-Electric Engineer, Toronto, on "Electricity for the Farm" lend additional interest.

Agricultural Societies of Ontario, Appendix to Annual Report, 1914. This is a record of the Standing Field Crop Competitions with lists of winners in grain and sheaves at the Canadian National Exhibition, Toronto, Central Canada Exhibition, Ottawa, Guelph Winter Fair and Eastern Ontario Provincial Seed Fair.

Fruit Growers' Association, forty-sixth annual report, 1914. A record of the proceedings at the fifty-fifth annual conven-

tion is presented, at which an address was given on "The Future of the Fruit Industry," by Mr. D. Johnson, Dominion Fruit Commissioner, and papers read by Professor J. W. Crow on "Citrus Fruits and Bananas in Relation to the Marketing of Ontario Fruits," on "Selection of Nursery Stock" and on "Co-operative Experiment," by Mr. F. C. Hart, Director of Co-operation, on "The Business Side of Co-operation;" by Mr. W. A. McCubbin, M.A., Dominion Field Laboratory of Plant Pathology, St. Catharines, on "Experimental Results on Peach Canker;" by Mr. Edwin Smith, in charge of Fruit Cold Storage and Transportation Investigations, Grimsby, on "Precooling of Canadian Fruits;" by Mr. F. M. Clement, Director, on "The Vineland Experiment Station: its Purpose, Aims and methods" and "Spring vs. Fall Planting;" by Mr. G. E. McIntosh, Transportation Expert, on "Business Methods for the Fruit Grower;" by Mr. Harold Jones, Maitland, on "Cultural Methods;" by Mr. W. H. Bunting on "Direct to the Consumer;" by Mr. D. W. Clark, on "The Retailer's Point of View" and Mr. W. T. Macoun, Dominion Horticulturist, on "Yields of Apple Trees at Different Ages."

The Cherry in Ontario, by E. F. Palmer, B.S.A. This is Bulletin 230 of the Fruit Branch of the Department of Agriculture. It consists of forty pages and is well illustrated. Commencing with "The Status of the Industry," Mr. Palmer describes the "Relative Importance of Sweets and Sours" and provides innumerable hints and suggestions and a vast amount of information on cultivation, fertilization, pruning, marketing, shipping, cost of production, etc. It is interesting to know that the cherry imports from the United States to Canada grew from 105,297 pounds valued at \$9,517 in 1901 to 1,072,300 pounds valued at \$119,021 in 1914.

Vegetable Growing, by S. C. Johnston, B.S.A. Vegetable Specialist, Ontario Department of Agriculture. This is Bulletin 231 of the Department. It gives explicit instruction on vegetable growing, both on a large scale and in back-yards. Illustrations and diagrams add to the value of the bulletin. Hot house cultivation and methods of irrigation are dealt with very fully. An especially interesting table is that giving the seed required for various crops. The information conveyed is calculated to be of especial value to the amateur vegetable gardener.

Field Beans, Bulletin No. 232, by C. A. Zavitz, B.S.A., Professor of Field Husbandry and Director of Field Experiments Ontario Agricultural College. Many farmers are taking up bean culture, in which this well-written and well-compiled

16-page publication, with apt illustrations, is calculated to help them. Professor Zavitz, who has evidently made a keen study of his subject, states that while from 1882 to 1891, the average annual value of the bean crop in Ontario was \$545,087, in 1912 and 1913 it averaged \$1,004,768, the total produce for the two years being \$2,009,537. Field beans are grown in every county of the province, but Kent is the banner county and was the first to start, that start being made in 1856. Prof. Zavitz furnishes particulars of the varieties, the complaints to which beans are subject, of their cultivation, and even of their cooking.

MANITOBA

Elementary Agriculture, School Gardening and Nature Section. This is a circular issued by the Department of Education of Manitoba. Rules for tree and shrub planting and advice on the selection of suitable trees for different soils are given. There are also tables of suggestions regarding time and manner of doing work and crops that can be grown in plots. The desirability of pupils keeping journals of their daily operations is impressed upon teachers.

The Teacher in Class-room, Garden and Playground is a bulletin circulated by the Manitoba Department of Education for the personal use of teachers. It contains Departmental notices and a list of agricultural questions for use in schools as well as percentage statements of the products of the world's principal countries.

The report of the Department of Education of Manitoba for the year ending June 30, 1914, forms a grey book of 187 pages, exclusive of a variety of full-page illustrations. A large increase in the number of school gardens and considerable advance in domestic science instruction are noted.

A feature of the report of the Manitoba Department of Education for the year ending 30th June, 1914, is the second annual report on School Gardening and Nature Study, by H. W. Watson, Director of Elementary Agricultural Education. Mr. Watson notes the improvement of the grounds at 34 schools, the planting of trees at 27 and gardening operations at 48. Some 40 school fairs were held last fall, and will be repeated this year. Grain for 4,415 experimental plots, potatoes for 1,054 experimental plots and about 60 lb. of Alfalfa seed and 12,000 windbreak seedlings were supplied free.

The Extension Service of the Manitoba Agricultural College has issued Circular No. 6, entitled "A Plea for Bird Houses." It gives cuts of a dozen easily-made bird houses.

The Department of Bacteriology of the Manitoba Agricultural College has published Circular No. 20 by C. H. Lee, Professor of Bacteriology, on "Alfalfa and Other Legumes Inoculation." It alludes to the importance of alfalfa being inoculated with nitrogen-fixing bacteria. There are two methods of inoculation. One is "seed inoculation with nitro-culture" and the other is known as "soil inoculation." Full directions are given in the circular for the application of both systems.

SASKATCHEWAN

Veterinary Summer School. This is a report of the proceedings of the First Summer School of the Saskatchewan Veterinary Association, held last year at Regina. The school, which was aided by a grant under the Agricultural Instruction Act, brought veterinary surgeons and breeders together from all parts of the province. Dr. J. A. Armstrong, president of the Saskatchewan Veterinary Association, presided and addresses of welcome were delivered by Lieutenant Governor Brown, Deputy Minister of Agriculture A. F. Mantle, and the Mayor of Regina. A variety of subjects was discussed relating, for instance, to the Intradermal Test for Tuberculosis, introduced by Dr. A. Knight of Victoria, B.C.; Biology, by R. A. McLoughry, Moosomin; Sclerostomes in Horses, by Dr. C. D. McGilvray, Winnipeg; Technique of Metacarpal Teuotomy, by Dr. John Scott, Peoria, Ill.; Pyaemic Arthritis, by Dr. H. Richards. Drs. Boucher, King, Mann and Hewitt dealt with specific cases and Dr. J. A. Armstrong (the President). Dr. L. L. Hewitt, Dr. Thomas Millar and Dr. John Scott led clinical discussions.

The second annual report of the Saskatchewan Hail Insurance Commission, just issued, shows satisfactory results. The two years' operations had produced a surplus of \$348,000, of which some \$280,000 was still owing by municipalities. There was, however, more than sufficient cash on hand to meet all liabilities. In 1914, the claims amounted to much less than in the previous year, although allowance had to be made for the drought in the southern part of the province. For one storm in 1914, which occurred on August 1st, the Commission paid out more than \$250,000.

Foot and Mouth Disease; its Nature, Cause and Treatment, compiled by J. C. Smith, B.S.A., Live Stock Commissioner, Saskatchewan. This is a bulletin issued by the provincial Department of Agriculture. It illustrates the terribly devastating character of the disease by directing attention to the fact that in the outbreak recently reported in Illinois up to March 3rd, 22,177 cattle, 30,842 hogs

and 1,022 sheep had to be slaughtered, involving a total loss of \$1,800,000, which was met half and half by the State and Federal governments. Between October, 1914, and January, 1915, the United States paid farmers three million dollars compensation in an attempt to eradicate the disease. The Bulletin warns farmers to report suspected cases on the instant to the Department at Regina.

Co-operative Organization Report, 1914. This is the first annual report of the Co-operative Organization Branch of the Saskatchewan Department of Agriculture. The work of the branch since its inception to the close of last year is gone over in full detail. A list of 113 co-operative societies in active working with the names of the secretaries and post office address of each is supplied. Reports received from all but eleven of these organizations give a membership of 2,850 shareholders. Advantages of the system are succinctly set forth with tables showing the exact working year by year in different directions.

Gardening for the Schools of Saskatchewan. This is a 42-page well-illustrated publication intended for the use of teachers in connection with lessons in nature study and agriculture, published and circulated by the Department of Education at Regina. In every branch of gardening, from the preparation of the soil to fruition, suggestions, advice and instruction are given, the whole forming a convenient, interesting and valuable handbook.

Vacant Lot Work in Regina. The monthly bulletin issued by the Department of Health, Regina, for March was devoted entirely to the cultivation of vacant lots, particulars of which have already appeared in THE GAZETTE. The notable features of the work is that in the short space of a year the gardens were made self-sustaining. Nearly five hundred vacant lot gardens are in bloom in Regina this year.

ALBERTA

United Farmers of Alberta. This is the Official Minutes of the Seventh Annual Convention, held at Edmonton, January 19, 20 and 21, 1915, with reports of the Board of Directors and Sub-Committees.

BRITISH COLUMBIA

Field Crop Competitions, Bulletin No. 61, Department of Agriculture, British Columbia, Live Stock Branch, prepared by J. C. Readey, Soil and Crop Instructor, being announcement of rules and regulations for 1915, and the awards for 1914. Bulletin No. 62 consists of the program for 1915, devoted entirely to potato growing by boys and girls, who must confine their operations to one-tenth of an acre.

Gardening on a City Lot, Circular Bulletin, No. 6, by W. H. Robertson, Assistant Horticulturist of the British Columbia Department of Agriculture. In this Bulletin, Mr. Robertson estimates that a family of five consume on an average thirty-five cents worth of vegetables a day, which could be produced in greater part on the spare land round the home at a modicum of that average. Because of the mild climate of the coast, he suggests that a good supply of fresh vegetables could be had every month in the year as follows:

December	}	Kale, parsnips, leeks, lettuce, parsley.
January		
February		
March	}	Spinach, broccoli.
April		
		Radish, onions, rhubarb, broccol.
May		Asparagus, peas.
June		Early cabbage, carrots, beets.
July		Early potatoes, parsnips, beans.
August		Tomatoes, cauliflower, onions, cucumber, summer squash.
September		Cabbage, salsify, herbs.
October		Celery, brussels sprouts, leeks, winter squash.
November		Fall lettuce, early spinach.

The bulletin furnishes information on preparing the soil, planting, quantity and quality of seed required, and cultivation. It also supplies a plan for a garden 40 feet by 40 feet, on which to grow both small fruit and vegetables.

The report of the Minister of Lands for British Columbia for the year ending December 31st, 1914, just issued, gives a great deal of information on matters affecting the land of the province, suitability for agriculture, dry-farming, character of the soil, etc.

The British Columbia Department of Agriculture has published a list of books recommended for the use of Women's Institutes. The list includes works on household economics, hygiene, nursing, eugenics, social and rural economy, gardening, horticulture, floriculture, and a variety of books suitable for children.

MISCELLANEOUS

Shire Stud Book (English). This is the 36th volume and contains the pedigrees of 5,325 animals, of which number 1,040 are stallions and 4,285 females. This is an increase of 32 stallions and 290 mares compared with the previous volume.

The Net Weight Law, as applied to the marking of butter and other fruit products, is the March Bulletin of the Maine, U.S., Department of Agriculture. Facts and figures are given in the same bulletin relating to "The Home Fruit Garden" and "Cow Testing Associations."

State-Aided Voc tional Agricultural Education, 1914. This is a 40-page reprint from the seventy-eight report of the Massachusetts Board of Education. It shows what was done and the progress that was made in the state last year in agricultural education. Very full statistical tables are given, showing the work of the pupils.

Canadian Thoroughbred Stud Book, Volume 1, 1914. This is the first volume of the registry of thoroughbred horses compiled and edited in the office of the Canadian National Live Stock Records and published by The Canadian Thoroughbred Horse Society. It contains the pedigrees of 691 stallions and 934 mares with index both of horses and owners, and a number of pedigrees in genealogical form of leading sires.

The Canadian Standard-bred Stud Book, Volume 1, compiled and edited in the office of the Canadian Live Stock Records and published by the Canadian Standard Bred Horse Society, 1914. This volume gives minutes of meetings, rules of entry, lists of officers and members, list of awards at the principal exhibitions and horse shows, and pedigrees of upwards of 1,600 trotters and pacers, with fittingly arranged indices.

Arbor and Bird Day Manual is an illustrated brochure, published by the Department of Free Schools for the Extension Department, College of Agriculture, West Virginia University, Morgantown, U.S., as a brief introduction says, "to invite pupils to the big out-of-doors, and to guide them in interesting and profitable study of the trees and the trees' companions -- the birds."

The Use of Phylloxera Resistant Stock, Part 1, by M. Blunno; Farmers' Bulletin No. 80, New South Wales. This is a pamphlet of 88 pages dealing with relative matter in all countries. A sentence in the introduction reads: "When it was ascertained that this pest is of American origin, and lives parasitically on the wild vines of the forests of that continent, a genial logic opened the hearts of viticulturists to hope that the ravages of the tremendous scourge might be prevented in an indirect way." The importance of the subject is signified in the question: "How many really understand that the crusade against this scourge is directed to save a capital of one thousand million pounds sterling already invested in France and Italy respectively?"

Single-Stalk Cotton Culture, by O. F. Cook, Bionomist in Charge of the Bureau of Plant Pathology, Washington, D.C., deals with the growth of Egyptian, Durango and Acala cotton plants.

The Agricultural Gazette of New South Wales, February, 1915, recently to hand, invites editors to make quotations "with credit". It gives notice of a change in the end of the statistical year from December 31 to June 30 and deals with dairy-farming and irrigation, diseases of fruit, demonstration areas, animal importations and so on. It also gives interesting tables of results of herd testing for milk and butter with cash values.

Weekly Report of the Department of Trade and Commerce, for the week ending April 19th. It is stated in this report that the price for Canadian cheese continues to soar and that while United States and Australian cheese went to 86 s., Canadian went to 96 s. per box. A government order for 60,000 Canadian and New Zealand cheese at the end of February created a scarcity in the open market that has not been entirely repaired. The highest point touched by New Zealand cheese is 92 s. The report also gives a summary of trade for the twelve months ending with February, 1915, which shows that Canada exported during that time animal produce to the value of \$72,116,554, against \$52,927,254 in 1914, and agricultural products to the extent of \$128,820,451, against \$208,836,012 in 1914, \$142,538,390 in 1913, and \$103,129,619 in 1912. Included in the principal articles imported for consumption in Canada in the same period were: fruits, \$15,796,574 against \$16,968,620 for 1914; vegetables, \$3,165,651 against \$3,245,622 in 1914; wool and manufactures, \$24,937,260 against \$32,455,710 in 1914. Among the principal articles exported from Canada for the years ending February, 1915, and 1914 in value were:—

Report of Department of Agriculture, New South Wales, 1913-14. This report shows an increase in horses of 302,000 since 1890 and in cattle of 731,000, although the latter showed a decrease of 200,000 compared with 1912. Between 1890 and 1900 sheep decreased nearly sixteen million, but there was an increase in 1913 compared with 1912 of 800,000. The number in 1890 was 55,986,431 and in 1913, 39,850,223. Pigs showed a decline of 5,000 in 1913 compared with 1911. In 1913-14 there were under crops 4,571,901 acres compared with 852,704 acres in 1890-91. Wheat showed 3,205,397 acres in 1913-14 against 333,233 in 1890-91. Potatoes in the same period increased from 19,406 acres to 38,725. In spite of dry weather dairying operations in New South Wales in 1913 did not suffer greatly, the yield of both butter and cheese, indeed, showing an increase, but in 1914 the effect of drought was seriously felt.

Manual Training and Vocational Education, April, 1915, published by the Manual Art Press, Peoria, Ill. Contents: "The Protocol and Industrial Education," Julius M. Cohen; "The Analysis of An Occupation," M. E. Haggerty; "Two Units of Manual Training for High Schools," Ira S. Griffith; "Domestic Art in Time of War," Isabelle McGlauffin; "Lockers or Unfinished Work," A. F. Siepert.

Marketing Farm Products, by William W. Higgins, Associate Editor of the Rural New Yorker, constitutes Bulletin, No. 17, of the State of Vermont Department of Agriculture. While this bulletin was especially prepared for the purpose of enabling the producers of agricultural

	To Great Britain.	To United States.	Total. 1915	Total. 1914
ANIMALS:				
Cattle		\$9,018,728	\$9,136,567	\$7,786,025
Horses	\$1,133,670	490,880	1,645,673	732,775
Sheep		280,084	286,662	127,716
BREADSTUFFS, FRUITS, ETC.:				
Barley	2,576,350	205,579	3,328,807	7,105,133
Bran	58,113			
Cereal foods	1,454,226	29,922	1,995,205	2,092,411
Oats	3,769,762	1,783,124	8,149,141	13,485,583
Oatmeal	300,791	12,995	322,438	502,002
Wheat	63,412,071	4,243,808	71,333,536	125,832,506
Wheat flour	14,271,138	226,565	4,615,172	4,134,529
Apples	2,186,479	72,369	2,390,797	3,737,641
Hay	96,701	829,179	2,118,390	1,731,117
Potatoes	71,447	39,450	680,210	1,121,430
Butter	141,940	275,374	631,043	316,313
Cheese	18,899,314	114,841	19,237,267	19,181,618
Bacon and hams	10,538,903	1,980,836	12,545,534	4,063,911
Seeds	1,085,828	9,846,483	11,015,869	27,840,750

products in Vermont to become better acquainted with the demands of the market in the way of grading, packing, etc., it contains much information of value to the producers of Canada, treating as it does of general market conditions, of packages, of the marketing of fruit, vegetables, eggs and poultry and dairy products.

Journal of Agriculture, South Australia, February, 1915, is the official publication of the State Department of Agriculture. It is noteworthy that, unlike the policy of THE GAZETTE, newspapers are warned against using the articles, as they are copyrighted. The Journal, besides containing statistics and official reports makes a special appeal for fruit and vegetables for the soldiers and sailors. It also contains some particulars of 'A Model Live Stock Insurance Association', conducted on the co-operative principle.

The Fourth Annual Report of the School Garden Association of America. This is an illustrated pamphlet of 30 pages and sets forth in matter and illustrations the growth of the School Garden Movement in America. In the president's address the following cities are mentioned as doing especially strong work in School Gardening:

Los Angeles, Fresno, Sacramento, California; Portland, Oregon; Victoria, British Columbia; Weyburn, Saskatchewan; Truro, Nova Scotia; Guelph, Ontario; Lincoln, Nebraska; St. Paul, Minnesota; Kansas City, Missouri; Chicago, Illinois; Detroit, Grand Rapids, Saginaw, Michigan; East Chicago, Gary, Indiana; Cleveland, Dayton, Cincinnati, Ohio; Birmingham, Alabama; Athens, Georgia; Rock Hill, South Carolina; Hampton, Richmond, Virginia; Philadelphia, Pittsburgh, Pennsylvania; Buffalo, Albany, Yonkers, New York City, New York; New Haven, Connecticut; Providence, Newport, Rhode Island; Boston, Worcester, Springfield, Brockton, Massachusetts; Louisville, Kentucky; Memphis, Tennessee.

The pamphlet also contains lists of bulletins on Home Canning, Domestic Science, Poultry, and Birds; the plan of a model school garden as prepared for the Panama Pacific Exposition, and the constitution of the School Garden Association, as adopted in San Francisco, 1911. The officers of the Association are: President, Van Furie Kilpatrick, 124 West 30th St., New York; secretary, Earl L. Finney, St. Paul, Minn.

BOOK REVIEWS

Wealth from The Soil, by C. C. Bowsfield, author of "Making the Farm Pay"; Forbes & Company, Chicago, 5 $\frac{1}{4}$ x 7 $\frac{1}{2}$ inches; 319 pages; price, \$1.00.

Although published in Chicago, Ill., there are chapters in this book calculated to make its perusal profitable in Canada. The author in his preface says that the work is intended "for all farmers, but more especially for those who hear the call of the soil and are trying to come abreast with modern conditions, make agriculture pay and gain the benefits of life in the country". The headings of a few of the chapters will best illustrate the contents and scope of the work. Starting with "City Men Turning to the Soil", which is not a list of names as might be supposed, but a general comment on what is going on, Mr. Bowsfield takes his readers through hints on "How to Engage in Farming", "Farm Planning and Management", "Social Aspect of Farm Life", "Keep the Young Folks Interested", "Promise of a Revolution in Marketing", "Parcel Post Advantages", "Importance of Farm Bookkeeping", "Progressive Dairy Management", and so on. Some sixty pages are devoted to "Successful Poultry Management". This section will probably most commend itself to such readers as the book may attract in this country.

The Principles of Fruit Growing, with Applications to Practice, by L. H. Bailey (The Rural Science Series), twentieth edition, completely revised; 432 pages; The Macmillan Company, London, New York and Toronto, 1915. A book that reaches a score of editions needs neither detailed description of its contents, nor testimony to its usefulness. The work contains the latest information on fruit-growing, including accounts of the most recent practices and discoveries. The different kinds of fruits, the heating of orchards to protect them from frost, the treatment of diseases and insects, the planning and laying out of orchards, and the use of fertilizers, are all dealt with. Fruit-growers cannot help but gain much valuable knowledge from this book. It is a veritable handbook and encyclopedia on all forms of fruit-growing, cultivation, keeping, packing and shipping.

A Credit Union Primer, by Arthur H. Ham and Leonard G. Robinson, published by Division of Remedial Loans, Russell Sage Foundation, New York City; 80 pages, paper cover, price 25 cents.

This is a veritable encyclopedic handbook of the Credit Union system. The Division of Remedial Loans of the Russell Sage Foundation has two main objects in view,

one being to terminate the existence of loan sharks and the other to enable industrious people who need to borrow money to be able to do so with the least possible expense. On page 481 of this number is given an outline of the work that the Caisse Populaire, founded by M. Alphonse Desjardins, C.B., is doing in the province of Quebec. In the state of Massachusetts something similar is being carried out under the sanction of an act providing for the organization of "Credit Unions." This primer has been prepared for the purpose of encouraging the formation of similar associations throughout America and of showing in detail the various steps, regulations and forms that are necessary to proper and sound business management. Messrs Ham and Robinson in the Introduction give a succinct account of credit union systems, the first of which originated in Germany as far back as 1849. As a

matter of fact there are two systems, one known as the Raiffeisen and the other as the Schulze-Delitzsch system. All co-operative credit, wherever found, the authors say, is patterned after one of these two systems. The number of co-operative credit associations or Credit Unions in existence in all parts of the world has been estimated to be more than 65,000, with a membership approximating 15,000,000 and an annual business amounting to \$7,000,000,000. By a series of questions and answers the objects of the credit union system, and the course necessary to pursue, in order to carry it into execution, are fully explained. In addition the bookkeeping required, shareholders' certificates, transfers, deposit and credit slips, interest tables, individual accounts and so on, are all given in form, along with the Credit Union law adopted by the state of New York last year.

NOTES

The Prince Edward Island Co-operative Egg and Poultry Association has opened an egg-candling and grading station in Charlottetown.

Organizations for co-operation among live-stock breeders in Saskatchewan have increased this year to the extent of 43, bringing the total number to 156.

The Government of British Columbia is circulating a million discs at the Panama Exposition referring prominently to the agricultural possibilities of the province.

At a meeting of the Haldimand Fruit and Vegetable Growers' Association the importance of bean culture was impressed upon members. Statistics were quoted showing that a profit of \$25 per acre was obtainable.

The annual report of the Superintendent of Education of Nova Scotia for the year ending 31st July, 1914, is a blue book of 260 pages. A feature of the report is the marked advance in rural science teaching that it indicates.

Professor H. R. Smith, of Animal Husbandry in the Minnesota College of Agriculture, has resigned to take a position with the First National Bank of St. Paul as an "apostle of diversified farming and live stock", under the direct auspices of the bank.

Stock yards that cover 160 acres are in course of construction at Edmonton, Alta.

The Canadian Pony Society will offer medals as usual at Toronto, Edmonton, London, Regina and Quebec exhibitions, and at the Guelph winter fair, and will subscribe \$10 to the funds of the Toronto open air horse show.

During March five new farmers' institutes were organized in British Columbia. As six were also organized in January and February, the total number of institutes has been increased this year from 111 to 122. Women's institutes have also been increased this year from 48 to 51.

An increase of 1,766,108 acres ploughed last fall is recorded on the Canadian Northern lines in the prairie provinces, the total being 6,181,376 acres. At 21.38 bushels to the acre, the average for 1914, in wheat, oats and barley, this would give 132,157,818.88 bushels.

Miss Hazel E. Winter, Supervisor of Women's Institutes in New Brunswick, reports that the Women's Institutes of the province have contributed nearly five thousand dollars to the different war relief funds, and that a donation of two thousand pairs of socks heads a long list of articles supplied to the soldiers, gives an encouraging account of the household science work and announces a series of short courses.

Vancouver, B.C., imported 4,332,000 pounds of onions in 1914 from Australia, Japan and the United States.

The Board of Agriculture for Waterloo County, Ontario, is offering a diploma for the rural school in each of the five townships, making the best showing in general equipment and surroundings. The inspectors will do the judging.

The Saskatchewan Department of Agriculture has appointed F. M. Logan, B.S.A., Assistant Dairy Commissioner, and P. E. Reid, Dairy Inspector. Both are graduates of the Ontario Agricultural College. Mr. Logan was formerly Creamery Inspector for Nova Scotia.

The Alberta Gazette, under date of April 15, 1915, announces the following appointments to the Board of Agricultural Education: Daniel Webster Warner, Clover Bar; Arthur Edward Shuttleworth, Blackie; Lew Hutchinson, Duhamel, and Charles Sherwood Noble, Nobleford.

Eighty-nine students graduated on March 26 from the Alberta schools of agriculture at Olds, Vermilion and Claresholm. The schools have only been in operation two years and these were the first batch of students to graduate. The student roll of the three schools shows upwards of 500 names.

Hon. J. A. Murray, Minister of Agriculture for New Brunswick, in order to enable farmers to get better prices for their wool than in the past, has established graded wool centres. Mr. Murray also secured 5,000 bushels of good seed wheat for distribution. Free samples of fodder corn, alfalfa and Swede turnip seed have also been distributed.

The outlook for live stock in British Columbia, according to Live Stock Commissioner W. T. McDonald, of British Columbia, is exceptionally satisfactory. There is much activity both in the dairy and meat business, particularly along the line of the Grand Trunk Pacific, and in the Nechaco and Bulkley valleys. Several large dairies have been opened in the fruit-growing section of Okanagan. The number of sheep is increasing. The milk tests being carried on by the Department of agriculture are proving most beneficial.

The series of one hundred dairy demonstration meetings promoted by the Saskatchewan Department of Agriculture along the lines of the Canadian Pacific and Canadian Northern railways attracted a total of 6,544 people. It is thought that the meetings will result in greatly enhancing the reputation of Saskatchewan for dairy products.

The Canadian Shire Horse Association will give \$35 in prizes at the Canadian National Exhibition, Toronto: \$20 at the London, Ottawa, Calgary, Edmonton, Regina and Brandon exhibitions and \$50 to the Guelph winter fair. The English Shire Horse Society will give two gold cups and gold medals for Shires at Toronto, and other exhibitions as usual this year.

In the article on "Cultivation of Vacant Lots" in Philadelphia in the April number of THE AGRICULTURAL GAZETTE, page 387, it is stated that the cost to the Vacant Lots Cultivation Association, the organization that is responsible for the work, is \$50 per garden for ploughing, fertilizer, seed, etc. This is a typographical error. The cost is only five dollars.

Dairy Commissioner W. A. Wilson of Saskatchewan, in a Press Bulletin, chronicles the fact that a series of one hundred dairy meetings has just closed, 53 being held along the line of the Canadian Pacific Railway and 43 along the Canadian Northern. The average attendance at the former was 52, and at the latter 80. Each company supplied cars in which lectures and demonstrations by lantern slides were given.

A prominent bank official of western Canada, who is taking a keen interest in the utilization of vacant lots for the growing of garden crops, says:

"It seems to me that the daylight saving scheme would be one of the greatest factors in helping on the kitchen garden movement. It would give everyone from Halifax to Vancouver an hour's more time to work in the garden in daylight than they would otherwise have and it would be a great thing for the health of the nation to have an extra hour for outdoor recreation, and last, but by no means least, there would be a wonderful saving of light, electric, gas and oil. The one hour extra daylight would mean that by the time darkness came it would be pretty nearly bedtime, going by ordinary rules."

The Farmers and Women's Institutes of British Columbia, through His Royal Highness the Governor-General, have received from the Imperial Secretary of State an acknowledgement of their contribution to the British Patriotic Fund, stating that of the £891.15 forwarded, £500 has been sent to the Belgian Minister for the relief of the Belgians and the balance paid to the Prince of Wales' National Relief Fund.

The Oka Agricultural Institute announces the return of Mr. H. Nagant, Agricultural and Forestry engineer, professor of mineralogy, rural engineering and agricultural chemistry, after a trying experience in Europe. Mr. Nagant visited his home at Louvain, Belgium, last summer, for his vacation. He had planned to return to his work for the opening of the college year in September, but was taken prisoner as a civilian at Munster in September, and did not secure his liberty until the end of March.

The British Columbia Department of Agriculture is conducting, through the Farmers' Institutes of the province, a competition among the boys and girls in the production of potatoes. The boys and girls competing undertake to grow a crop of a certain minimum size, to keep accurate records of the expense and labour put upon the plot, to estimate the value of the crop at \$20 per ton when harvested and \$5 a ton for culled potatoes, then to give a statement of the total value of crop, cost of production, net profit or loss; net cost of producing a ton of potatoes and the net profit per acre.

In the weekly report for April 12 of the Department of Trade and Commerce the report of the Trade Commissioner for Argentina is given. From this it appears that the Argentines import from three to five million kilos of cheese annually, Italy supplying by far the larger portion. A good deal of cheddar cheese is consumed, the bulk of which, although from the United Kingdom, is believed to be largely of Canadian manufacture. The Commissioner remarks that there is no reason why this trade should not be carried on direct. He also says that the 56-lb. cheese as made in Canada would be acceptable to the Argentine market. Speaking of hams and the fact that Great Britain is the principal exporter next to the United States, the Commissioner says the British excel in their methods of packing, where Canada is deficient. A trial shipment from this country was made some time ago, but the hams being packed in sawdust instead of rice or oat husks they proved unsatisfactory.

The legislature of Idaho has passed, and the governor has signed, a bill calling for the creation of the office of director of farm markets. The director is to be appointed by the governor, and it is his duty to promote economical and efficient distribution of farm commodities. He is to maintain a market news service, including information relative to crops, freight rates, commission rates, and any matter considered of service to the producer or the consumer. He is to investigate the methods of commission merchants and others who receive, solicit, or in any way handle the produce of farms. He is authorized to take legal action if necessary.

British returns for February 1915, compared with the same month last year show the following in agricultural products:

IMPORTS FROM CANADA

	Feb., 1915	Feb. 1914.
Wheat	£580,907	£569,860
Wheatmeal and flour.	174,482	137,375
Oats	33,983	14,556
Barley	6,559	31,126
Bacon	304,710	73,775
Hams	64,098	12,066
Cheese	90,506	57,981

Wool in value to the amount of £21,105 was exported to Canada against £7,505 in February of 1914.

The British Columbia Department of Education has decided to include agriculture as an optional subject in the high schools, thereby making it possible for boys to pursue this branch of study after leaving the public school. Competent teachers, with special qualifications as instructors in the various branches of agriculture, will be appointed in these high schools, which will be chosen from those schools situated in the best agricultural districts. The agricultural specialists, in addition to teaching agriculture proper, will also assist in teaching some of the regular science work of the high school, especially the biological part. They will also spend a part of each week supervising the work in elementary agriculture and school gardening in the public schools of the districts or municipalities in which the high schools are situated. Extension classes in agriculture will be opened in these particular high schools for boys and young men who are not regular students in the high school and who can give only a portion of their time to such studies. These classes will be held either during the day or in the evening, as may be found convenient or desirable.

The grain situation as it is understood in the mother country is well expressed in a recent number of the *Scottish Farmer* in the following paragraph:—"Grain supplies for the year 1915-16 are causing considerable anxiety in high quarters. It appears certain now that this country will not feel the pinch of excessive prices—which means scarcity—this year, but it is not all certain that a like comfortable condition of things will prevail should the war continue during the whole of this summer and autumn. It is now dawning on some minds that the Allies will require to feed Belgium for a year, and they will also require to feed Serbia, should there be any of that gallant nation left to be fed. The pestilence is wasting that land to the full as badly as war, and the Allies who are more favourably situated have a huge task in hand. Grain growing will not be the staple industry of the Hungarian plains this year, and the Dardanelles are a long way from being pierced. The powers that are safeguarding the food supplies of India, and the release of the Black Sea wheat flotilla is not yet in sight. The British navy has done wonders, but the wisest men are those who recognize that 'Waste not, want not,' should be our motto as well as that of Great Britain's foe."

Congress appropriated a total of \$27,551,782 for the promotion of agriculture during the next fiscal year. In addition to the regular appropriation of the federal department of agriculture this includes the following:

Smith-Lever fund, \$1,080,000; printing fund, \$500,000; meat inspection fund, \$3,000,000. The appropriation act for the fiscal year beginning July 1, 1915, sanctions the plan of re-organizing the department which was recommended by Secretary Houston in his recent annual report. For the first time, definite provision is made for funds to assist in the eradication of contagious diseases such as foot-and-mouth disease, rinderpest, contagious pleuro-pneumonia and other such diseases which are likely to attack domestic animals. The sum of 2½ millions of dollars is provided to meet any emergency in combating epidemics. The department will not have to wait for an act of Congress to provide the needed funds, as was

the case in the recent outbreak of foot-and-mouth disease. In the future the Secretary of Agriculture may use as much of this fund as the occasion may demand. "*The Ohio Farmer*," *Cleveland, Ohio*, April 24, 1915.

A colonial honey competition is to be held at the Royal Agricultural Hall, London, Eng., in connection with the annual grocers' exhibition, to take place from September 18th to 24th this year. There are to be two classes, one of twelve 1-pound jars of extracted granulated honey and the other of beeswax in three 1-pound cakes, judged for quality of wax only. Gold and silver medals and diplomas are to be given as prizes. Any information desired can be had on application to the Department of Trade and Commerce, Ottawa, reference to be made to file No. A. 1478. Entries should be in by September 11th, 1915, and should be addressed to the High Commissioner for Canada, London, Eng.

The wheat prospects for 1916 are being discussed under a variety of aspects in different parts of the United Kingdom and her oversea dominions and dependencies. It is anticipated that there will be an increase in growth in this country of 5 per cent, and in Canada of 30 per cent, over that of 1915. The reports from India regarding the crop now being harvested are striking. There is an area under the crop of 32,148,000 acres, with an estimated yield of 10,293,000 tons. The best recorded yield in the past was that of 1911, namely, 10,061,000 tons. The area last year was 27,697,000 acres, and the yield 8,427,000 tons. There is thus a very substantial increase. The arrangements made to prevent such an export of wheat from India as would have left the population of that great dependency in a state approximating famine in a year of plenty have been published. They seem to be quite sane, and calculated to prevent such a disaster to India, and at the same time allow for the export of at least 2,000,000 tons of surplus wheat to the mother country at reasonable prices.—"*Scottish Farmer*," *Glasgow*, April 24th, 1915.

According to Extension Bulletin No. 31 of the Iowa State College of Agriculture, entitled "Unlawful and other Weeds of Iowa," the unlawful weeds of that state are: quack grass, Canada thistle, cocklebur, wild mustard, curled dock, smooth dock, buckhorn, wild parsnip, horse nettle, velvet weed, burdock, Russian thistle, shoo-fly or bladder ketmia and wild carrot. All these weeds, the majority of which are not unknown in Canada, are, according to the Iowa Weed Laws, to be destroyed between 15th July and 15th August. The bulletin consists of 38 pages and is well printed and illustrated.

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The Agricultural Gazette of Canada

EDITOR · J. B. SPENCER, B.S.A.

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Subscriptions should be forwarded to the Editor, Agricultural Gazette, Ottawa.

THE SHORT COURSE

PERHAPS no system of instruction has spread with greater rapidity, nor has more firmly gripped the rural population, than "The Short Course". Commencing with dairying, it was soon applied to other branches of agriculture, and is now extended to the study and demonstration of many other industries.

It was in 1881 that the first short course in agriculture was held in Canada. At a cheese factory, established at St. Denis, Kamouraska county, Quebec, there were commenced that year classes for instruction in the art of cheesemaking. A year later similar classes for instruction in creamery buttermaking were inaugurated at the creamery at Ste. Marie, Beauce county, in the same province.

Commencing in the early nineties the Ontario Agricultural College began a system of short courses. In 1893 the Dairy School was opened for courses of two months and less and that year the first summer school for teachers was organized. Since then the work has spread over the different provinces where it has become the means of reaching thousands of men and women, boys and girls, within easy reach of their own homes, besides large classes of instructors and others who have taken advantage of the courses provided at the agricultural colleges and schools. Much of this work is carried on under the provisions of THE AGRICULTURAL INSTRUCTION ACT.

From the beginning the colleges and schools have held their short courses, but during the past year more students were reached at outside points and this is where the greatest need has been met. Many a young man and woman have thus been inspired with the charm of their own calling, who hitherto saw little but drudgery in it.

There have been brought together in this issue reports from every province except British Columbia, of the short courses held during the year ending with March last. These have covered not only agricultural education but those relating to technical, domestic and mechanic science. This series contains much for educationists of every class.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

DIVISION OF ILLUSTRATION STATIONS

ILLUSTRATION STATIONS IN ALBERTA AND SASKATCHEWAN

BY JOHN FIXTER, SUPERVISOR

THE Experimental Farms Branch of the Dominion Department of Agriculture, under direction of Mr. J. H. Grisdale, Director, has undertaken a limited amount of illustration work in crop production and cultural methods with farmers in Saskatchewan and Alberta.

This work is being incepted along the following lines: -

The Experimental Farms Branch, through its officer, Mr. John Fixter, supervisor of illustration stations, gets into touch with a young farmer, with intelligence and public spirit, owning and operating a farm located near some railroad station or small centre of population. The farmer co-operating puts under the direction of the Department a part of this farm, about 45 acres, the area having a frontage of not less than 48 rods, on a well-travelled highway, so that the work carried on may be unavoidably in evidence to the casual traveller and easily inspected by the interested visitor.

Each piece of land is divided into 8 five-acre fields each having the same frontage on the highway. These

fields are separated by roads one rod wide running from end to end, leaving five acres clear in each field for crop production.

The Department, for the first year, furnishes pure seed necessary to sow such of the five-acre fields as it is decided to put under crop that year. In subsequent years, the farmer is to save enough of the best of the crop grown on these fields to do the necessary seeding.

All cultural and harvesting operations in connection with these fields, that is to say the ploughing, cultivating, discing, harrowing, etc., and the threshing of the grain therefrom, are to be done by the farmer. All work indicated above has to be done in exactly such ways, and at such times, as directed by the illustration division of the Experimental Farms Branch.

The farmer is to keep a record of the amount of time taken to perform the different operations, and to thresh the grain harvested from each of these fields separately, so that it would be known how much was harvested from each, and the total cost of producing the crops.

wheat, oats. With this rotation it has been the practice of many farmers to sow oats on the wheat-stubble by simply disking before sowing in spring time. This method, in some instances, has given fair results. It is intended, however, to cultivate a portion of the wheat-stubble after harvest and plough early in the autumn as a comparison.

Field "G".—Three acres of Field "G" are to be used for experimental work with alfalfa and two acres with western rye grass. The shortage of fodder necessitates the growing of some kind of crops that will ensure nutritious food for both the summer and winter feeding of live stock.

Field "H" is to be divided into two equal parts of $2\frac{1}{2}$ acres each. Corn and wheat are to be grown alternately. The object of this illustra-

tion is to find out if by growing corn and cultivating the land thoroughly while the corn is growing, then ploughing the land as soon as the corn is harvested, will give as good results as the ordinary summer-fallow.

The lines of work that are to be made special features of the illustration stations are:—

The production of pure seed grain suitable to the different localities, and so have considerable quantities available for seed at reasonable prices.

The demonstrating to the farmer that a certain rotation of crops is suitable to the district in which the farm is located.

To illustrate on a farmer's farm, by a farmer, the best methods of soil cultivation, moisture conservation, and fertility upbuilding.

CROPPING SYSTEM ON ILLUSTRATION AREA

LOCATED AT

Field.	YEAR.		
	1915.	1916.	1917.
A	Wheat continuously.		
B			
C	2-yr. rotation,		
D	Wheat.	Fallow.	
	Fallow.	Wheat	
	3-yr. rotation,		
E	Fallow.	Wheat.	
F	Wheat.	Oats.	Fallow
G	Oats.	Fallow.	Wheat.
	Alfalfa 2 acres in rows 36 inches apart.		
	" 1 " broadcast.		
	Western rye grass.		
H	Corn $2\frac{1}{2}$ acres in rows 36 inches apart.		
	Wheat $2\frac{1}{2}$ acres.		

LIST OF DEMONSTRATION STATIONS

The location of the illustration farms selected in Alberta and Saskatchewan with the names of their owners here follow:

NAMES	ADDRESSES	NAMES	ADDRESSES
Neil McLean	Shuravon, Sask.	Percy J. H. Warren	Assiniboia, Sask.
Chas. W. Appelgren	Pambrun, Sask.	E. J. Hunt	Medicine Hat, Alta.
R. H. Babe	Whitla, Alta.	Milton Holmes	Herbert, Sask.
G. L. Hammond	Maple Creek, Sask.	Wm. Huxtable	Prelate, Sask.
E. H. Thomas	Gull Lake, Sask.	F. N. Perry & D. C.	
F. W. Abraham	Cabri, Sask.	Perry	Grassy Lake, Alta.
R. & N. Grier	Macleod, Alta.	T. H. Frankish	Foremost, Alta.
Jos. A. Nielson	Carmangay, Alta.	W. M. Kinder	Milk River, Alta.
Matti Mikelson	Manyberries, Alta.	Ottawa Farm Develop-	
Martin Mortensen	Bow Island, Alta.	ing Co., Limited, T.	
Frank Barry	Empress, Alta.	J. How, Manager.	Beadle, Sask.
J. A. Meldrum	Magrath, Alta.	Jerry Fisher	Jenner, Alta.
Sandgren & Carlson	Pincher Creek, Alta.		

THE DIVISION OF ANIMAL HUSBANDRY

SUMMARY OF FEEDING EXPERIMENTS

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

A large number of feeding experiments were conducted during the fiscal year, ending March 31st, 1915. A few experiments which were completed are herewith summarized.

LAMB FEEDING EXPERIMENTS

In the early fall of 1914, 100 lambs were purchased for feeding experimental purposes. To these was added the lamb crop of the Experimental Farm, giving a total number of 140 lambs to be used on this work.

Owing to the enormous quantities of elevator screenings annually collected at terminal elevators, the problem of the most economic disposal of these is becoming a serious one. An experiment was here made to show the value of the complete screenings and products of the same in the finishing of light lambs for the midwinter and early spring markets. This experiment was divided into two periods,-- period 1, on the elevator screenings and products compared with a good grain mixture, and, period 2, where all lots received a good grain mixture for finishing for the market.

The experimental period gave the following results:--

Lot 1 received the standard grain mixture, composed of oats, 2 parts; bran, 2 parts; oil cake, 1 part. This lot made very satisfactory gains and good profits, namely, 54 cents per lamb.

Lot 2 received grain composed of one-half the standard grain mixture and one-half complete, finely pulverized elevator screenings. This lot made 7 per cent greater gains than lot 1, although it consumed less of the grain. The valuation of \$10 per ton on the elevator screenings as compared with \$26 per ton for the

standard grain mixture, showed a profit per head in this lot of \$1.16. The elevator screenings replacing half the standard grain mixture acquired a value of \$39 per ton.

Lot 3 received a grain mixture of pulverized complete elevator screenings alone. They made very much smaller gains than lot 1, but, due to the low cost of screenings, made 50 per cent more profit, namely, 80 cents per head. Compared with lot 1, the elevator screenings here have a value of about \$26 per ton.

Lot 4 received a grain mixture of pulverized complete elevator screenings with the blackseeds screened out before grinding. This meal was given a valuation of \$12 per ton. This lot made the same gains as lot 1, but, due to the low cost of feed, made the greatest profit--\$1.20 per head. Compared with lot 1, the elevator screenings less blackseeds acquired a value of a little over \$36 per ton. Compared with lot 3, it is a splendid evidence that it pays to screen out the blackseeds before feeding.

Lot 5 received blackseeds alone. As shown in a comparison of lots 3 and 4, the blackseeds alone for lot 5 produced very little gains, any gains made being due to the roughage given. However, as this product is worth but little, the gains did not cost more than would leave a reasonable profit.

Lot 6 received a mixture of Caldwell's Molasses Meal and blackseeds. The bitter, distasteful qualities of the blackseeds were thus overcome and the lambs consumed this product greedily. It is peculiar to note that the greater the quantities of blackseeds the lambs were thus induced to eat, the lower and more expensive the gains. Generally speaking, this part of the elevator screenings is dis-

tasteful and worthless as a sheep feed.

In the four-weeks' finishing period all lambs received the same standard grain mixture as lot 1 received in the experimental period. All lots made very profitable gains. As might be expected, lots which were on blackseeds or any ration containing blackseeds responded most readily to this change of foodstuffs and made the greatest and cheapest gains in the finishing period.

Although lots 1 and 4 were rather too heavy and overdone for the market, yet the other lots finished off in prime condition. These lambs, originally purchased for from 7 to 7 $\frac{1}{4}$ cents per pound live weight, topped the Toronto market in the month of March at over 9 cents per pound live weight, thus giving valuable experimental evidence regarding the elevator screenings and at the same time making a good profit.

COW FEEDING EXPERIMENT NO. 1

A barn set aside for cow feeding experiments was utilized to carry on a series of tests to show the value of elevator screenings and by-products for the manufacture of milk and butterfat. The standard meal mixture fed during the winter in this barn consisted of bran, 4 parts; gluten feed (23 per cent), 2 parts; corn meal, 2 parts; oil cake, 1 part; cottonseed meal, 1 part. This mixture cost \$26 per ton. From 15 to 20 cows were used in experiments 1, 2, 3 and 4. The importance of such experiments is readily understood. Western farmers particularly should keep all the elevator screenings at home and utilize the same for the manufacture of milk or meats.

Experiment No. 1 consisted in a comparison of the above standard meal mixture versus a ration composed of standard meal, 2 parts; pulverized complete elevator screenings, 1 part. As much milk was produced by the use of the elevator screenings and at somewhat lower

cost per hundred pounds. In this experiment the elevator screenings acquired a value of \$34 per ton.

COW FEEDING EXPERIMENT NO. 2

This experiment was a comparison of the standard meal mixture (see experiment 1) versus a ration composed of standard meal, 2 parts; finely pulverized blackseeds, 1 part. A much lower production of milk followed the adoption of this latter ration. However, the blackseeds being only valued at \$4 per ton showed a somewhat lower cost of production. This, however, is indefinite, for the shortening of one-third of the standard meal mixture might have shown as good or better results than where the blackseeds were added. The blackseeds were very unpalatable and were refused in part by some of the cows throughout the whole period. No ill-effects followed their use but no good results were shown.

COW FEEDING EXPERIMENT NO. 3

This was a comparison of the standard meal mixture (see experiment 1) versus a ration composed of standard meal, 2 parts; complete pulverized elevator screenings, 2 parts; Caldwell's Molasses Meal, 2 parts. There was a marked decrease in the production of milk by the adoption of the latter ration, as might be expected, due to the lower protein content. However, it cost 5 cents less per hundred pounds to produce milk, due to the low valuation of the elevator screenings. In this lot it was shown that a mixture of equal parts of Caldwell's Molasses Meal and pulverized complete elevator screenings may have a valuation of \$25 per ton as compared with the standard meal mixture.

COW FEEDING EXPERIMENT NO. 4

This was a comparison of the standard meal mixture versus a ration composed of standard meal, 4 parts; Caldwell's Molasses Meal, 1 part.

The latter ration showed slightly less milk produced and with an increase in cost of 7 cents per hundred pounds of milk. The Caldwell's Molasses Meal here has a valuation of \$22.50 per ton, although its market value is \$34 per ton.

COW FEEDING EXPERIMENT NO. 5

Ensilage versus Molasses

The idea of this experiment was to show the value of molasses when a farmer has a shortage of succulent roughage. The molasses was, in a diluted condition, poured on the hay. Thirty pounds of ensilage per cow per day was replaced by 15 pounds of ensilage and 4 pounds of best quality feeding molasses, which cost \$23 per ton. About the same quantity of milk was produced on each ration, the latter ration showing slightly greater cost. With ensilage valued at \$2 per ton and the hay and grains valued as seen in the report of "Dairy Records" elsewhere in this issue, molasses thus acquires a valuation of \$11.90 per ton.

COW FEEDING EXPERIMENT NO. 6

Turnips versus Molasses

The purpose of this experiment was similar to experiment No. 5. Thirty pounds of roots was replaced by 4 pounds of molasses, the molasses being fed diluted, sprinkled on the hay. In this case all the succulent roughage, namely roots, was replaced by the molasses, with the result that there was slightly less milk produced and at an increased cost of 8 cents per hundred pounds of milk. When compared with the valuations placed on other foodstuffs, molasses here is worth only \$10.20 per ton.

SWINE FEEDING EXPERIMENT NO. 1

Summer feeding of Shoats in outside paddocks

Lot 1 received a grain mixture composed of shorts, ground oats, ground corn, equal parts, with skim-milk.

Lot 2 received the same grain mixture as lot 1 with skim-milk and with an addition of 5 pounds of green feed (fresh cut rape).

Lot 3 received a grain mixture the same as lot 1 with the exception that the corn was not included directly in the mixture but was fed in a Hopper grinder, the pigs grinding this for themselves. The skim-milk was given in the same quantities as in lots 1 and 2.

Deductions.—Lot 1 made the greatest and cheapest gains, which cost only 5.5 cents per pound. Lot 2 made the most expensive gains, which cost 6.2 cents per pound. Lot 3 made satisfactory gains, which cost 5.9 cents per pound. Fed in the above way to shoats 4 and 5 months of age on a 70-day feeding experiment in the paddocks, rape here had no valuation whatever. The Hopper grinder gave better results than in previous trials, but was not of much value, as the pigs were compelled to consume more grain in order to overcome the labour of grinding.

SWINE FEEDING EXPERIMENT NO. 2

Grains and Milk Substitutes for Weaning Pigs

This, too, was a summer feeding experiment in the outside paddocks. The average age of the pigs at the start of each experiment before weaning was less than 28 days. The experiment continued for 84 days.

Lot 1 received skim-milk plus a meal composed of corn, 3 parts; shorts, 3 parts; oil cake meal, 1 part. This lot produced the cheapest gains, at a cost of 3.06 cents per pound.

Lot 2 received skim-milk plus a meal composed of corn, 3 parts; shorts, 3 parts; Swift's Digester Tankage, 1 part. In other words, the ration for lot 2 was the same as for lot 1 with the exception of tankage replacing oil meal. Due to the much greater cost of tankage, this lot made gains which cost 4.3

cents per pound. Fed in the above rations, oil meal and tankage are worth the same pound for pound for young pigs.

Lot 3 received skim-milk plus a meal ration composed of corn, 6 parts; tankage, 1 part. This lot made the greatest gains of any, but stood third as to cheapness of gains, showing a cost of 3.5 cents per pound. When compared with lot 1, where the shorts are replaced by the corn, corn in this experiment showed a valuation of \$44.80 per ton.

Lot 4 received no skim-milk. A meal ration was fed, similar to the meal ration of lot 3, namely, corn, 6 parts; and tankage, 1 part. This lot made the lowest and most expensive gains, which cost 4.23 cents per pound. The smallest profits were made from lot 4. When compared with lot 3, it is seen that skim-milk had a valuation of \$7.30 per ton, or over 36 cents per hundred pounds.

Lot 5 received skim-milk and the meal consisting of finely ground corn alone. This lot made the second poorest gains, but the gains were made cheaply, costing only 3.1 cents per pound. Compared with lot 3, where tankage was added, the tankage has a valuation of \$11.80 per ton. Compared with lot 4, skim-milk has a high valuation while tankage has only a value of a little over \$3 per ton.

Deductions. Generally speaking, lots 1, 2 and 3 were most satisfactory and developed by far the best feeding pigs. Tankage is only a fair substitute for skim-milk, but may be used in case of necessity to fair advantage. A well-balanced grain mixture with skim-milk produces hogs with much more scale and which will finish off pork worth at least 1 cent more per pound live weight, due to better development of the frame for carrying a prime finish.

SWINE FEEDING EXPERIMENT NO. 3

The Value of Elevator Screenings and By-products for Finishing Hogs

This experiment was conducted during the winter months to show the value of elevator screenings, and some of the constituents of elevator screenings as compared with a good standard meal mixture.

Lots 1 to 5, inclusive, received the same quantity of skim-milk and roots. Lot 6, however, received neither skim-milk nor roots, the grain being fed as a water slop in both periods of the experiment.

This experiment was divided into two periods, namely, an experimental period and a finishing period. In the finishing period all lots received the same standard meal mixture which lot 1 received in the experimental period. In the experimental period lot 1 received a standard meal mixture composed of shorts, 3 parts; finely ground corn, 3 parts; linseed oil meal, 1 part.

Lot 1 made the greatest gains, but came fourth for cheapness, the gains costing 4.7 cents per pound.

Lot 2 received a mixture composed of standard meal mixture (as lot 1), 1 part; finely pulverized blackseeds, 1 part. This lot stood third for the largest gains and second for cheapness of gains, costing 3.8 cents per pound. It would appear in this lot as though the blackseeds had some value as a foodstuff. This, however, is not borne up in succeeding lots.

Lot 3 received a meal composed of finely ground blackseeds alone. The blackseeds here appear to have a value of \$4.98 per ton less than nothing when compared with the returns from lot 1. This lot stood fifth as to total gains and the gains cost 7.6 cents per pound.

Lot 4 was fed a meal composed of finely ground buckwheat screenings, which were taken from the complete elevator screenings. Com-

pared with a value of \$26 per ton for the standard meal of lot 1, buck-wheat screenings here have a value of \$27.60 per ton. This lot stood second for the greatest gains and made the cheapest gains, which cost only 2.7 cents per pound.

Lot 5 received a meal mixture composed of finely pulverized complete elevator screenings, 3 parts; and Ogilvie's "Noxol" feed flour, 1 part. This lot stood fourth for the largest gains and third for cheapness of gains, which cost 4 cents per pound. This mixture of screenings and flour here has a value of \$18.40 per ton.

Lot 6 received finely ground blackseeds and water alone. No gains were made, but the blackseeds, although very unpalatable, had sufficient value to maintain the original weight of the animals.

Finishing Period:—As stated above, all lots received the standard grain mixture in the finishing period and were all fed alike in every way except that lot 6 received no milk or roots. The cost per pound gain of the various lots in the finishing period is as follows:—

Lot 1.....	7.3 cents.
Lot 2.....	5.7 "
Lot 3.....	4.7 "
Lot 4.....	5.6 "
Lot 5.....	4.7 "
Lot 6.....	4.6 "

It is thus seen that lots which had received blackseeds in the experimental period and which had made too expensive gains at the age when gains should be made most cheaply, responded very readily to the good meal mixture of the finishing period and made the greatest and most economical gains. It is to be noted, however, that pigs which received blackseeds in the experimental period were more or less stunted and did not have the scale to finish off prime carcasses, as did lots which received the better grain ration during the experimental period.

All lots were fed in duplicate, careful records being kept not only as to the weights of the individuals, but also as to the feeds consumed. Chemical analyses of the feeds used for swine feeding and all other experiments are being made for complete compilations.

DAIRY RECORDS

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

IN the following table are given the two best records in each breed, for cows which have finished their lactation periods during the fiscal year ending March 31, 1915. It is to be noted that many of the best cows in each of the herds have not finished their lactation periods previous to March 31, hence are not included. Only two Holstein heifers finished their lactation periods, and it is scarcely fair to compare them with mature cows of other breeds. A number of the best Holsteins are completing splendid records during the months of May and June.

The following valuations were placed on foodstuffs:—

Pasture, per month....	\$ 1.00 per cow.
Meal mixture	25 00 per ton.
Hay	7.00 "
Straw	4 00 "
Roots and ensilage	2.00 "
Green feed	3 00 "

In calculating the value of products, 30 cents per pound was allowed for butter, and 20 cents per hundred pounds for skim-milk and buttermilk. Although a great deal of the milk was sold to very much better advantage, yet this is a fair basis of calculation.

THE DIVISION OF APICULTURE

A METHOD OF RECORDING COLOUR VARIATIONS AND INVESTIGATING INHERITANCE IN HONEY BEES

BY F. W. L. SLADEN, DOMINION APIARIST

THE abdomen of the worker honey-bee is protected on the upper or dorsal side by six hard plates or segments telescoping into one another. Normally the apical margin of each segment covers more or less of the base of the segment that follows it. If, however, the abdomen is sufficiently stretched all the segments are fully exposed.

In certain races of bees, for instance, those inhabiting Western Europe and the typical Carniolan bee, the segments are entirely black. In other races, for instance, those found in Italy, the basal portion of the first three segments is orange. In certain races found in Southern Asia and Northeast Africa, and in the artificial American breed known as the "Golden" bee, the orange colour covers the whole of the first three segments, and part of the fourth segment and also a crescent-shaped portion of the thorax known as the "scutellum". In extreme goldens a stage further is reached; the first four segments are entirely orange and the fifth is more or less so. Between these four stages every degree occurs.

To denote the different degrees of colouring the terms "black", "leather-coloured Italian", "three-banded Italians", "four-banded", "five-banded" and "golden" have been used, but these terms are employed somewhat loosely and the writer is not aware that they have ever been scientifically defined. In 1901 (*British Bee Journal*, December, 1909, "Breeding the British Golden Bee in Ripple Court Apiary") he used the term "black" for bees that had the segments entirely or almost entirely black, "intermediate" for those in which the basal portion of the first, second and third segments were orange, and "golden" for those

in which these segments were entirely orange, dividing the intermediates into dark intermediates and light intermediates, and the goldens into dark goldens and goldens.

But for the bee-breeding, work upon which is now under way at the Central Experimental Farm, Ottawa, these distinctions are inadequate, and the proposal is now made to divide the degrees of colour into eleven stages, the expressions one-tenth (or .1) yellow, two-tenths (.2) yellow, and so on up to nine-tenths (.9) yellow, being used to denote the different stages between full black and full yellow. Each of these stages may be sub-divided into any number of "types" up to 10. Thus we may have a total of 101 types, ranging from entirely black to the most extensively yellow. There is a certain amount of irregularity in the spread of the yellow, suggesting, as was remarked in 1912 (*Canadian Bee Journal*, Volume XX, page 362), the presence of more than one Mendelian factor.

Definitions of the eleven stages that the writer has so far found to be most satisfactory are:—

Full Black.—Abdomen entirely black.

- .1 Yellow.—Segment 2 black with two widely separated yellow spots at the base. (These spots are usually connected by a narrow yellow line at the base).
- .2 Yellow.—Basal half or thereabouts of segment 2 yellow, but markedly clouded in the middle; apical half black.
- .3 Yellow.—Basal half or thereabouts of segment 2 almost or quite clear yellow, apical half black. Segment 3 with a black band or large dark spot anterior to felt band.

- .4 Yellow.—Segment 1 with narrow black margin. Portion of segment 3 anterior to felt band only slightly clouded in middle or almost or quite clear.
- .5 Yellow.—Segment 1 with very narrow brown-black margin interrupted or almost so in the middle. Dark margin of segment 2 narrower than in previous stage.
- .6 Yellow.—Segment 1 almost or quite clear yellow to the margin. Segment 2 very narrowly edged with brownish-black.
- .7 Yellow.—Segment 2 almost or quite clear yellow to the margin. Segment 3 narrowly edged with brown-black.
- .8 Yellow.—Segments 2 and 3 clear yellow to the margin. Segment 4 with black band wider than yellow band.
- .9 Yellow.—Segments 2 and 3 clear yellow to the margin. Segment 4 yellow in middle.
- Full Yellow.—Segments 2, 3 and 4 with no black.

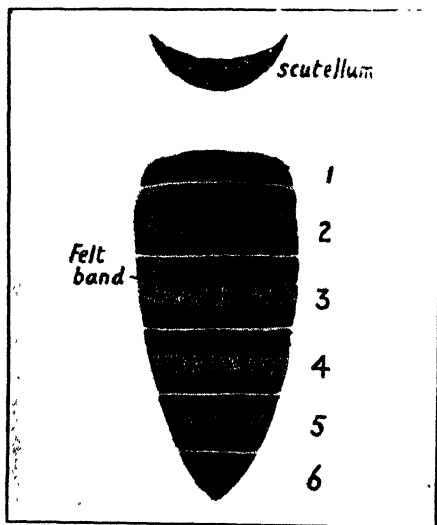


DIAGRAM OF DISTRIBUTION OF COLOUR IN WORKER HONEY-BEE .45 YELLOW

It will probably take a year or two of study to define the different "types". However, a "type" to which I have given the designation .45 yellow, illustrated herewith, will serve as an example. In this the yellow on segment 3 extends under the felt band except at the sides.

Provided thus with a designation for practically every variation in tegumental colouration, we can proceed to record the colour differences of colonies.

It must be noted here that the honey-bee is unique among livestock in its method of reproduction. The queen or female bee when only a few days old is mated by the drone or male, who dies immediately. For the rest of her life, lasting three or four years, the female eggs she lays, which have been computed by F. R. Cheshire for a prolific queen to number 1,500,000 and develop into workers or, if specially treated, into queens, are the result of this one union; but all the males she produces, it is believed, are parthenogenetic, that is, they are exclusively the progeny of the queen. The point in these remarkable facts that chiefly concerns us here, is, that an impregnated queen honey-bee, like a hermaphrodite animal, carries in herself the female and male reproductive elements of one pair of individuals, and she continues to produce an enormous number of individuals "true" to this pair without any possibility of taint from other individuals until her death three or four years later.

Thus the progeny of a queen-bee is not, like a sow's litter or a hen's clutch, an occasional small brood whose nature is determined by the last male that served the mother, but it is a steady stream, so to speak, of a certain type that does not change and can be studied at any time, year after year. Even while this stream is going on we may study the second and third generations bred from it.

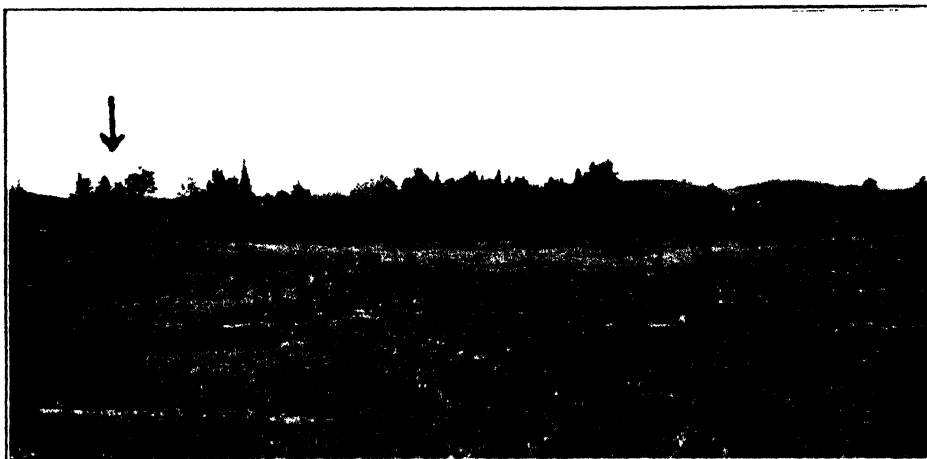
It will thus be seen how very important an analysis of the colour of the workers produced in the different colonies is in bee breeding work.

To make the analysis, one hundred workers are taken (preferably recently hatched ones from a cage that

has been placed a few days previously over hatching brood in order to insure the non-inclusion of bees of other parentages), and are separated into "stages".

The space between two parallel

colour index taken on April 1, 1915, of a colony produced by an impregnated queen imported from Novara, Italy, in June, 1913, and at "B" and "C" of two colonies produced by two daughters of this

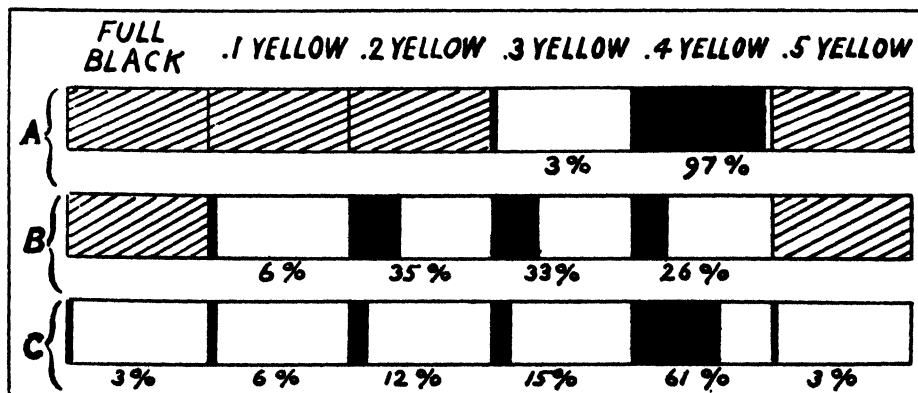


DOMINION BEE-MATING STATION ON THE KAZUBAZUA PLAINS, QUE.

lines drawn on a sheet of paper is divided into as many equal parts as there are "stages", and a portion of the left end of each part proportionate to the percentage of workers belonging to the "stage" to which that part is devoted is blackened. This diagram is called the "colour index" of the colony. The accompanying engraving gives at "A" the

queen that were mated at the Dominion Bee-Mating Station at Kazubazua, Que., forty miles north of Ottawa, with local black drones in July, 1913. These analyses had to be made with adult workers, because the two cross-mated queens were killed in October, 1914, to make room for other queens.

It will be seen that in the hybrid



COLOUR INDEX OF COLONIES OF BEES

colonies 41 per cent and 21 per cent respectively of the workers showed .2 yellow and less, not to mention a considerable proportion that showed .3 yellow, while in the Italian colony there were no workers that showed less than .3 yellow, and 97 per cent showed .4 yellow. It is evident, therefore, that, assuming that the imported queen was pure and purely mated, an Italian queen mated with a black drone can be distinguished from one that is mated with a pure

Italian drone by the darker colour of many of her workers. This conclusion is at variance with the statement recently made by Newell (*Science*, February 5, 1915, Volume XLI, page 219) that "the purity of an Italian queen's mating cannot be determined by an examination of her workers" and "the only test of an Italian queen's mating is found in the colour of the drones produced by her daughters."

THE DIVISION OF AGROSTOLOGY

A SUMMARY REVIEW OF THE RESULTS FROM ALFALFA EXPERIMENTS

BY M. O. MALTE, PH.D., DOMINION AGROSTOLOGIST

WHEN alfalfa, some thirty to forty years ago, was first experimented with in Canada, it was mostly looked upon as a kind of curiosity from which general benefit to the agricultural development of the Dominion hardly could be expected. Its triumphant sweep through the Southern and Pacific parts of the United States, and its general success in certain countries of Europe, notably France, made it, however, imperative, to the Dominion Experimental Farms, to thoroughly investigate its adaptability to Canada.

To say that the first effort to make alfalfa live up to its reputation of being the "acme" of forage crops, met with general success, would hardly be correct. As a matter of fact, the first attempts to prove its universal usefulness to the Dominion were sadly frustrated. Failure after failure was recorded and success was encountered only in a few cases. From the many reports, often puzzlingly contradictory, it seemed likely that the much-heralded alfalfa would be of a rather circumscribed value to Canada as a whole.

But perseverance and untired

efforts have radically changed the alfalfa outlook. Today, there does not exist, in agricultural Canada, any alfalfa problem in the sense that its profitable growing is of a problematic nature. On the contrary, the multitude of experiments carried out by the Experimental Farms and Stations, especially during the last fifteen years, have clearly demonstrated that the alfalfa problem has been essentially solved and that "the King of the Clovers" has conquered the vast agricultural areas of the Dominion.

Many difficulties had, however, to be overcome. The strange nature of alfalfa, so unlike that of other "clovers", necessitated special methods of handling which only by repeated experiments could be dislodged. Its peculiar requirements to soil, its dependency on the subsoil, the difficulty to establish it on land where it had never been grown before, etc., meant so many problems to be studied and worked out. These problems are now all satisfactorily solved, and, to the practical farmer, the alfalfa road to success is now free from those obstacles which, at the beginning of the experiments, rested on lack of knowledge of the

proper handling and management of the crop. For detail information on these subjects the reader is referred to Experimental Farm Bulletins, Nos. 46, first series, and 8, second series.

During the course of the experiments, a problem of the most far-reaching importance arose.

In spite of all precautions taken, in spite of the best agricultural methods being employed for the safeguarding of the crop, it often happened that the alfalfa, or rather certain alfalfa strains, failed to come through the winters satisfactorily. A few years' experiments were sufficient to prove conclusively that in the majority of cases, the failure of a variety to survive during the winters without being totally or partially killed was due to the use of seed secured from countries with mild winters. Seed from Chili, Argentine, Arabia, Southern United States, etc., gave crops lacking in hardiness and thus liable to be winter-killed. On the other hand, there seemed to be a few outstanding varieties which, to a much less degree, were subject to winter-killing. The most prominent of those were *Turkestan* and so called *Variegated Alfalfa*, the latter being represented chiefly by the Grimm variety.

The discovery of hardy varieties was, of course, of immense benefit to the Canadian farmer in as much as money and labour could be more safely invested in alfalfa growing.

To the Experimental Farms, endeavouring to make alfalfa one of the essential forage crops in the Dominion, the existence of hardy varieties alongside of tender ones was most interesting. It brought up the question *why* certain varieties were hardy, and led to an analysis of the very nature of the hardiness. The results of these investigations which have been conducted during the last few years, are, in reality, of far greater importance than the discovery of hardy varieties itself.

A brief discussion of the meaning of the biological character called hardiness may help to explain how a thorough understanding of its nature is furthering the victorious advance of alfalfa through the Dominion.

May it be said, at the outset, that the nature of the hardiness is not necessarily the same in different varieties. Take for instance variegated alfalfa and hardy *Turkestan Alfalfa*. Both are of a hardy nature in the sense that they stand Canadian winters without injury, but if we analyze *why* variegated alfalfa is hardy, and *why* the *Turkestan* variety is hardy, we come to the conclusion that the varieties referred to represent two essentially different types of hardiness.

The Variegated Alfalfas have been originated as crosses between ordinary alfalfa and Yellow Lucerne. The latter species is a native of the Old World occurring through all parts of Northern Europe and Siberia. This distribution indicates that it is able to come through severe winters without being killed, in other words, that it is perfectly winter hardy. When Yellow Lucerne is crossed with ordinary alfalfa its ability to endure extreme cold is inherited by the cross and its off-spring. The hardiness of variegated alfalfas is therefore simply due to the inheritance of cold resistant qualities from the Yellow Lucerne.

The hardiness of *Turkestan* and *any other variety of pure alfalfa* is of quite a different type.

In variegated alfalfas the hardiness is due to the presence of Yellow Lucerne blood, that is to say to the presence of a hardiness character inherited from a uniformly hardy species. The pure alfalfas present a totally different problem. Their hardiness or tenderness is more of an individual character, *i.e.*, their hardiness or tenderness is determined by the hardiness or tenderness of the individual plants. A certain

strain may thus be completely winter-killed whereas another may be killed to say fifty per cent. That is to say one strain may be composed of individuals which, to one hundred per cent, prove unable to endure the winters, while another may possess individuals which to the extent of fifty per cent., are able to do so.

The correct interpretation of such facts has been arrived at through a study of those individuals which have proven hardy, or rather through a study of their progeny. Briefly, it has been found that *seed secured from surviving individuals produces plants which also survive.*

The significance of this is of the utmost importance. It means that surviving individuals represent hardy types or hardy strains. The fact that hardiness is an hereditary character opens almost unlimited possibilities for alfalfa in Canada. It simply means that, by elimination of all tender types and, as a consequence, by the saving and propagation of hardy types only, the problem of a successful evasion of winter-killing has been practically solved.

Results obtained by the Experimental Farms fully confirm this statement. As an illustration may be cited the experiments with alfalfa growing at Fort Vermilion, in the Peace River District.

For years, alfalfa has been tried

at this Sub-Station. For years only discouraging results have been recorded, in-as-much as all "varieties" have been badly winter-killed. In 1913, when, the importance of the hereditary nature of hardiness began to be fully recognized, the Fort Vermilion station was supplied with seed gathered from a few plants which had proven able to withstand severe winters. *This seed has produced a crop which shows no perceptible signs of winter-killing.*

There is no doubt that the ultimate success at Fort Vermilion is due to the use of seed originated from hardy types. A lengthy discussion to prove this conclusively is out of the question in this article. Suffice it to say that the Fort Vermilion experience is by no means an isolated one. Numerous results have been recorded which all tend to show that the ability of alfalfa to withstand severe winters can be most extraordinarily increased by the use of seed from hardy types or, which means the same, from hardy strains only.

This means, to the farmer, that a safe way of making alfalfa growing a success is to utilize seed produced at home. By saving and using home-grown seed every farmer has it in his own hand to secure an alfalfa which is perfectly acclimatized to the conditions of his locality and which therefore can be expected to yield the very best returns.

NEW APPOINTMENTS

Recent appointments to the staff of the Dominion Experimental Farms system are as follows: R. L. Ramsey, Assistant to the Superintendent, Experimental Farm, Agassiz, B.C.; R. D. L. Bligh, B.S.A., a recent graduate from the Ontario Agricultural College, Assistant to the Superintendent, Experimental Sta-

tion, Kentville, N.S.; B. C. Milne, B.S.A., graduate from the Manitoba Agricultural College, Assistant to the Superintendent, Experiment Station, Lacombe, Alta.; S. A. Bjarnason, a graduate from the Manitoba Agricultural College, Assistant to the Superintendent, Experimental Farm, Brandon, Man.

THE ENTOMOLOGICAL BRANCH

THE OUTBREAK OF THE WESTERN ARMY CUTWORM IN SOUTHERN ALBERTA

BY C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST

DURING 1914, the moths of the western Army Cutworm (*Chorizagrotis*) were extremely abundant in Southern Alberta, and it was thought that a serious outbreak of the caterpillar would probably occur in the spring of the present year. Such has proved to be the case. Throughout April and early May, Mr. E. H. Strickland, Field Officer of the Branch stationed at the Entomological Laboratory, at Lethbridge, Alta., demonstrated at many points the value of early trenching to control this cutworm. Fields which were known to be infested were selected for demonstration purposes and deep furrows were ploughed around them, after which a log with a man standing thereon was drawn through the trench to crush the pieces of earth and thus make a dust furrow. As soon as the caterpillars recovered from their winter inactivity and began to migrate, they wandered into the trenches, where they were killed by devouring a poisoned bait made by adding 1 pound of Paris green to 50 pounds of shorts and then pouring in 1½

gallons molasses dissolved in one gallon of water. Ten pounds of the shorts is sufficient to treat 70 rods of furrow. In one experiment 537 dead worms were found in one foot of trench. Stinkweed and alfalfa hay poisoned with Paris green and placed along in the trenches was also found of value. The use of poisoned stinkweed as a bait is a novel discovery of Mr. Strickland's of no little significance in view of the prevalence of this weed on neglected lands and its increase. The appearance of the cutworm is influenced probably by the occurrence of this weed upon which the female moth deposits her eggs. The relation of the cutworm to the prevalence of this and other weeds has its own moral and constitutes a matter of distinct interest. This species is different from the cutworm of which an outbreak occurred two or three years ago and which was investigated by Mr. Strickland. Its habits, and consequently the methods of control, are different.

Further detail's of this work which is now in progress will be published in a later issue of THE GAZETTE.

THE FRUIT BRANCH

ONTARIO FRUIT CROP PROSPECTS

SO far as we are able to report, the apple crop of Ontario promises to be below average. In the northern, southern and western sections, where an inspection was made at blossoming time, there

were few instances of a heavy bloom. The very large crop of 1914 also leads one to believe that this year the production in Ontario will not be great.

Plums and cherries have shown an

excellent blossom and peaches promise to bear a full crop. Some danger was anticipated from frost in the Niagara Peninsula, but up to the present time (May 15th) no injury

has been reported. A full report of fruit conditions throughout Canada was published for general distribution on June 1st.

ONTARIO BASKET FACTORIES

A second visit has just been made, by a representative of this Branch, to the basket factories of Ontario. At the time of the first inspection—a report of which appeared in the May number of the GAZETTE—there was a great lack of uniformity in the sizes of packages which were then being made. The manufacturers were shown where alterations and improvements were necessary, and it

is a great satisfaction to know that practically all fruit packages now being made are of correct dimensions and of strong material. All the managers have corrected their previous mistakes and the result is that no discrimination can be shown by growers in favour of any one particular factory. In order that this state of things may continue, there will be quite frequent inspections made throughout the year.

FRUIT INSPECTION STATISTICS

THE following figures indicate the ratio between the number of packages of fruit inspected in the season of 1914-15, and the total number of packages in the lots inspected. These inspections

were made by the staff of Fruit Inspectors, temporary and permanent, numbering about 50 in all. The figures also show the total number of inspections which were made.

VARIETY	No. of Lots Inspected	No. of Pkgs. in Lots Inspected	No. of Pkgs. Inspected
Apples, barrels, 1914-15	8,926	765,445	59,602
“ boxes, 1914-15	2,769	457,055	36,118
“ baskets, 1914-15	191	29,476	3,994
Crab apples, boxes, 1914-15	38	2,443	951
Pears, boxes, 1914-15	894	91,121	9,760
Peaches, boxes, 1914-15	735	183,952	10,035
“ baskets, 1914-15	147	17,797	2,422
Plums, baskets, 1914-15	643	180,154	12,294
Tomatoes, baskets, 1914-15	305	103,742	12,171
Small fruits, quarts, 1914-15	1,162	1,529,598	151,559
Grapes, baskets, 1914-15	244	308,728	22,394

THE SEED BRANCH

UNUSUAL DEMAND FOR SEED GRAIN

BY GEO. H. CLARK, B.S.A., SEED COMMISSIONER

A general demand for good seed of cereal grains commenced soon after last harvest, and the quantity that has been distributed through the usual channels of commerce is much in excess of the average. Through the eastern provinces the amount of seed wheat and oats sold by seed merchants during the last five months in many districts has been two or three times that of the average year. The supply has been in plenty and farmers have never been more particular as to quality than this year.

Seldom have climatic conditions in all parts of Canada been more favourable to rapid progress in seedling operations. The anxiety because of continued dry weather during the early part of the season for seeding, served to stimulate to an application of more thorough cultural methods. The rush of work at the seed-testing laboratories at both Ottawa and Calgary was over this year at least two weeks earlier than usual, which may be taken as a fair index to the general progress of spring seeding. Recent reports from numerous centres, and particularly from the Prairie Provinces, indicate that unusual efforts have been made everywhere by farmers in general, by using superior seed grain, extra cultivation and early seeding to insure a good crop, and what is most important they have during the past two weeks been favoured with rainfall which has been general and sufficient.

Apart from the increased areas sown to wheat and oats, the supply and demand for seeds of other crops has been about normal. Our seed

inspection returns to date show a marked improvement in the conditions of the grass and clover seed supplies. Only in a few unimportant lines, such as vetches, dwarf Essex rape and garden beans, has severe shortage been felt, and with these crops substitutes may be provided.

Farmers should be warned against placing confidence in casual agents who in some districts are quite active again this year, particularly in parts of the province of Quebec, and who are selling seed of very ordinary or worthless kinds and quality, at abnormal prices. Sweet clover is being grossly misrepresented and the seed is being sold to farmers under names unfamiliar to them at prices that leave excessive profits to unscrupulous agents, who dare not return to the locality of their former operations.

There are indications that the high prices for wheat and oats, and the low values to producers of potatoes and some other crops are having their most natural usual effect. The areas devoted to the former this year are being increased everywhere in most cereal producing countries and there is some danger that the areas devoted to potatoes and other crops that are not in general demand for export, may fall much below the average. There is this year an abundant supply of excellent potatoes suitable for planting, and farmers throughout central Canada should take advantage of the present condition of the supply to secure fresh stock of seed potatoes that are of good vigour as the result of having been produced in a cool moist climate.

Ample intimation has already been given respecting supplies of field root and garden vegetable seeds which heretofore have come mainly from France, Germany, England and other European countries. It is not to be recommended that Canadian farmers and gardeners should undertake the production of these seeds on an extensive scale until they have had experience with them, but it is much to be recommended that they

this year transplant 50 or 100, or even 500, good, shapely sound roots or plants from which to obtain good seed for themselves, and also make provision for next year by procuring the purest available seed of the best variety to grow seed roots for transplanting next spring. It is reasonably certain that they may need both the experience in seed growing and the seed itself.

THE HEALTH OF ANIMALS BRANCH

THE ANIMAL CONTAGIOUS DISEASES ACT

BY Order-in-Council the order under "The Animal Contagious Diseases Act" of date the 9th day of May, 1915, is hereby amended as follows:--

"Hay in car lots from the States of Minnesota, North and South Dakota will be admitted, provided each shipment is accompanied by an affidavit that the hay is the product of these States."

SWINE SLAUGHTERED IN INSPECTED ESTABLISHMENTS

YEARS ENDING MARCH 31ST, 1914 AND 1915.

Eastern Canada, 1915	1,751,732	67 40 per cent of total kill.
" " 1914	1,230,467	68 41 per cent " " "
Increase	521,265	42 36 per cent over 1914.
Western Canada, 1915	847,006	32 60 per cent of total kill.
" " 1914	568,189	31 59 per cent " " "
Increase	278,817	49 07 per cent over 1914.
All Canada, 1915	2,598,738	
" " 1914	1,798,656	
Increase	800,082	44 48 per cent over 1914

The number of swine slaughtered in Canada at inspected establishments during the year ending March 31st, 1915, was 2,598,738.

THE LIVE STOCK BRANCH

RECORD OF PERFORMANCE

THE Record of Performance of pure-bred dairy cows continues to grow in popularity and extent of scope, both as regards the number of animals for which applications are received and which qualify for entry. During the year applications were presented from breeders in all the provinces of the

Dominion, Manitoba having been included in the itinerary of the inspectors some months since. Owing to the extension of the territory, and to the increase in the number of entries, it has been necessary to add two additional permanent inspectors to the staff.



SHORTHORN COW, "DAIRYMAID" 86086

NUMBER OF COWS FOR WHICH APPLICATIONS HAVE BEEN RECEIVED

Holstein	641	Increase as compared with preceding year	75
Ayrshire	487	" " " "	123
Jersey	159	" " " "	44
Guernsey	30	" " " "	15
French Canadian	17	Decrease " " " "	16
Shorthorn	77	" " " "	13
Total	1,411	Increase " " "	228

NUMBER OF COWS QUALIFIED						
Holstein ..	196	Increase as compared with preceding year				31
Ayrshire.. . . .	123	"	"	"	"	4
Jersey...	35	"	"	"	"	5
Guernsey	9	"	"	"	"	7
French Canadian	14	"	"	"	"	12
Shorthorn	36	"	"	"	"	27
Total .	413	"	"	"	"	86



HOLSTEIN COW, "MAY ECHO" 3372.

The records made during the year have not been remarkable, except in the case of the French Canadian and Shorthorn breeds. For both of these breeds records have been made which exceed any previous record made since the commencement of the test. The two highest records made in each of the breeds are as follows:

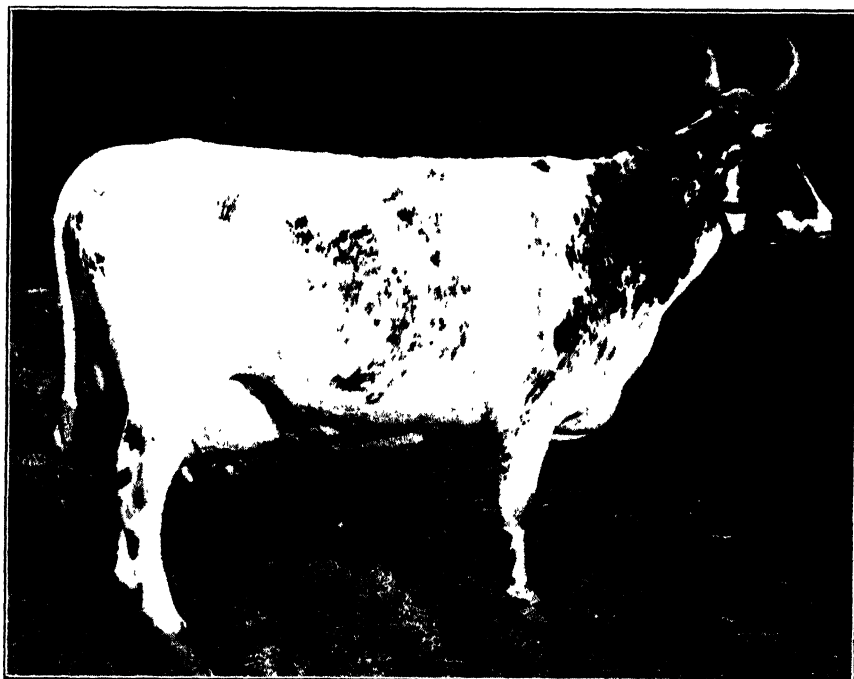
SHORTHORN		Lb. Milk	Lb. Fat
"Dairymaid" 86086, owned by S. A. Moore, Caledonia, Ont		15,535	540
"Gipsy Lady 2nd" 52080, Estate of W. A. Smith, R.R.No. 1, Clandeboye, Ont		11,578	530

FRENCH CANADIAN			
"Filie" 2130, owned by Sir H. Montagu Allan, Beaconsfield, Que.	10,767		453
"Denise Championne 13" 1625, owned by Sir H. Montagu Allan	10,140		413

GUERNSEY			
"Gipsy of Willow" 392 (4 year-old), owned by H. A. Dickson, Central Onslow, N.S.	11,445		520
"Gipsy of Willow" 392 (mature), owned by H. A. Dickson, Central Onslow, N.S.	10,249		507



JERSEY COW, "SADIE MAC OF P. R. F."



AYRSHIRE COW, "MILKMAID 7TH" 28769

HOLSTEIN-FRIESIAN

"May Echo" 3372, owned by W. P. Allison, Chesterville, Ont.	23,707	834
"Dairy Pauline Pietertje" 7042, owned by Archibald Parks, Napanee, Ont.	23,807	830

JERSEY

"Sadie Mac of P.R.F." 406, owned by Hiram H. Gee, Hagersville, Ont. . .	15,211	754
"Sunbeam of Edgeley" 629, owned by Jas. Bagg, Edgeley, Ont.	14,450	727

AYRSHIRE

"Milkmaid 7th" 28769, owned by A. McRae & Sons, Charlottetown, P.E.I.	16,696	729
"Primrose of Tanglewyld" 15943, owned by Wooddisse Brothers, Rothsay, Ont.	16,195	626

It should be observed that the higher average production of all cows qualifying and the higher percentage of cows which qualify is particularly significant as regards this year's operations.

DISTRIBUTION OF BULLS

THE following table shows the number of applications that have been made for bulls in connection with the distribution policy of this branch, which was inaugurated in 1914. Mention of this distribution was made in THE GAZETTE, (Volume 1, No. 8, August, page 616.) The total number of bulls loaned to associations, as shown in the foregoing reference, was 414. Applications have been received this year from 502 associations, showing that the efforts of the branch in this direction are being appreciated and that associations are taking advantage of the opportunity presented for stock improvement.

APPLICATIONS FOR BULLS FOR THE SEASON OF 1915

	B.C.	Alta.	Sask.	Man.	Ont.	Que.	Mari.	Total
Shorthorn	6	67	126	13	21	54	16	303
Ayrshire	3	1	1	..	2	76	25	108
Holstein	6	2	9	2	4	18	5	46
Hereford . . . . .	..	4	5	4	..	3	1	17
Angus . . . . .	..	3	4	4	1	..	..	12
Jersey	1	..	..	..	..	1	..	2
Canadian . . . . .	..	..	..	..	..	6	1	7
Red Polled . . . . .	..	2	2	1	..	..	..	5
Guernsey . . . . .	..	..	..	..	..	..	1	1
Galloway . . . . .	..	1	..	..	..	..	..	1
	16	80	147	24	28	158	49	502

PART II

Provincial Departments of Agriculture and of Education

SHORT COURSES

The following series of articles describes in detail the short courses in agriculture and related subjects held during the year beginning March 31st, 1914, and ending March 31st, 1915, in all the provinces ex-

cepting Alberta and British Columbia, and in each of the provinces similar courses have been held and horticultural instruction given in British Columbia as outlined on page 460 of the May GAZETTE.

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THE following short courses were held in the province of Prince Edward Island during the year beginning March 31, 1914, and ending March 31, 1915:

COURSE FOR PUBLIC SCHOOL INSPECTORS

During the first three weeks of June a special course in nature study and school gardening was provided for school inspectors who are at the same time agricultural instructors in the public schools. Nine attended, the tenth was not at that time appointed. Instruction was provided by Prof. W. Davison, B.S.A., of the Department of Agriculture; Prof. F. F. Smith, of Buzzards Bay, Mass., and by members of the Departments of Agriculture and of Education.

The classwork was altogether confined to such subjects as would have a direct bearing on the teaching of nature study, but was of an advanced

nature. In conjunction with the course a number of conferences were held attended by the principal of Prince of Wales college, the Superintendent of Education, Secretary for Agriculture, Inspectors and Instructors. At these meetings a skeleton course of nature study suitable for public schools was drawn up and discussed and is now in use through the schools of the province.

SUMMER SCHOOL FOR TEACHERS

The summer school for teachers was held in Charlottetown from July 7th to 29th. There were 517 members enrolled, 105 men and 412 women.

Five hours each day were devoted to class work under the best specialists in the teaching profession that could be obtained. The remainder of the day was devoted to laboratory and field work, and to lectures and discussions.

A large number of scholarships were offered by public spirited citizens of the Maritime Provinces for competitions at this session of the school.

The following composed the faculty of the school and the subjects taught by them.

- Prof. George Chavignaud, Halifax, N.S., Drawing.
 Miss Grace E. Hackett, Boston, Mass., Drawing.
 Prof. D. S. McIntosh, D.Sc., Halifax, N.S., Geology.
 Prof. E. Chesley Allen, Yarmouth, N.S., Zoology.
 Prof. D. W. Hamilton, Ph.D., Montreal, Que., Agriculture and School Gardening.
 Prof. W. N. Biggar, Sussex, N.B., Manual Training (Cardboard Work).
 Prof. James C. Clarke, Boston, Mass., Manual Training (Wood Work).
 Prof. S. A. Starratt, B.Sc., Boston, Mass., Physiology.
 Miss Mary M. Wood, New York City, English Literature.
 Prof. G. B. Reid, Ph.D., Cambridge, Mass., Botany.
 Prof. W. J. Reid, B.S.A., Charlottetown, P.E.I., Chemistry.
 Prof. S. J. M. Allen, Ph.D., Cincinnati, Ohio, Physics.
 Prof. W. Davison, B.S.A., Charlottetown, P.E.I., Nature Study.
 Prof. J. L. Tennant, B.S.A., Charlottetown, P.E.I., Nature Study.
 Prof. F. F. Smith, Buzzards Bay, Mass., Nature Study.
 Miss Bertha Gorman, Charlottetown, P.E.I., Elocution.

All the science subjects were taught with special reference to their bearing on agriculture. The school was primarily an agricultural school for teachers.

In addition to the foregoing an opportunity was given to teachers to qualify for the Teachers' Certificate in Physical Culture. The Department of Militia and Defence furnished two instructors, viz.: Sgt. Instructor Irlem, of Fredericton, N.B., and Instructor M. Miller, of Charlottetown. Each teacher who qualified was given a bonus of \$15.00 by the Department of Militia and Defence. Upward of three hundred qualified.

HORTICULTURAL AND OTHER COURSES

A short course in horticulture was held from November 17th to December 5th. It was attended by twelve students. Instruction was given in the making of apple barrels and in packing of apples in boxes and barrels by Prof. Leslie Tennant, B.S.A., of the Department of Agriculture, and by A. E. Dewar, President of the Fruit Growers' Association.

Short courses in animal husbandry, in cereal husbandry and in milk testing were held from January 4th to 15th, 1915. The number in attendance was 220. The practical work was carried on by Prof. W. J. Reid, B.S.A., Instructor in Cereal Husbandry, Prof. J. Leslie Tennant, B.S.A., District representative for Kings County; Mr. J. A. Clark, B.S.A., Supt. Experimental Farm; Mr. F. T. Morrow, Inspector of Cheese Factories and Creameries; Richard Creed, Albion, Kings county; and W. R. Shaw, of St. Catharines.

HOUSEHOLD ECONOMICS

Under the direction of the Women's Institute branch there was one course consisting of five classes, with an average of twenty-five students, held in household economics. This course was held in conjunction with the Prince of Wales College, Charlottetown. No classes were held at outside points.

Several new topics were taken up for the first time, namely dietetics and nutrition, household furnishing, arrangement of an efficient kitchen, with a view to saving steps, millinery, vegetable gardening, landscape gardening, tuberculosis, household administration, farm home conveniences, laundry, which were all well received.

Judging from the interest in certain of the above subjects the method of practical demonstration and application seemed to be the most appreciated, and the most profitable means of instruction.

NOVA SCOTIA

BY M. CUMMING, B.S.A., SECRETARY FOR AGRICULTURE

NEVER in the history of the Nova Scotia Department of Agriculture have such a successful series of short courses been held as that which was completed on March 4th. To begin with there was the two weeks' short course held at the college at Truro during January, the enrolled attendance at which was 286, practically all from the province of Nova Scotia, the adjoining provinces of New Brunswick and Prince Edward Island having held courses of their own.

Even more successful, if possible, were the five short courses, each of three or four days' duration which were held at Bridgewater, Yarmouth, Shubenacadie, Musquodoboit and Antigonish. In each of these places the local Agricultural Society or similar organization have made contributions of the necessary land and also part of the money. These, supplemented by funds provided under the AGRICULTURAL INSTRUCTION ACT provided the means necessary for the erection of demonstration buildings in which the courses were held. These demonstration buildings contain one or more large class rooms capable of seating 300 or more students, and are well suited for demonstrations in live-stock judging, seed judging as well as lectures.

No pains were spared to make these courses successful. The lecturers, for the most part, were the senior members of the college staff at Truro assisted by B. L. Emslie, fertilizer expert of Toronto, J. A. Clark, Superintendent Experimental Farm, Charlottetown, and others. Morning, afternoon and evening sessions were held, the hours being from 10 to 12 a.m., 1.30 to 5 p.m., and 7.30 to 9.30 p.m. The usual procedure was to hold in the mornings, lectures and conferences on soil cultivation, manures and fertilizers, etc. In the afternoons, demon-

strations in the judging of live stock of all kinds and seed were held. In the evening, lectures on the care and management of live stock, soil cultivation, etc., were given. One evening at each course was devoted to the very important subject of "Patriotism and Production," and without exception this was the largest meeting at each course.

At each place locally owned stock was used for demonstration purposes and for the most part proved very satisfactory. Moreover a feature at every course was an informal conference on local agricultural problems which always proved most valuable. At the evening lectures lantern slides were used to a considerable extent for purposes of presenting pictures of the best types of live stock, barn construction, soil cultivation and drainage.

In one or two cases bad weather caused a somewhat reduced attendance at the morning sessions, but this was largely off-set by attendance at some of the evening meetings of from 250 to 350. The general average at every session of the five courses, morning, afternoon and evening was 147.

So successful have these short courses proven that the Department would like to extend them through every part of the province. The difficulty, however, is to be able to secure thoroughly efficient men, for without such men these courses would never attract the interest and arouse the enthusiasm which they do. The college faculty was drawn on to about its limit in connection with these five courses. It would seem that in the future the agricultural staff must be increased in numbers and no doubt this will be done as the country realizes the efficient work which is being accomplished through the short courses as well as through the many other lines of work which are now being carried on.

DEPARTMENT OF EDUCATION

BY A. H. MACKAY, B.A., SUPERINTENDENT OF EDUCATION

THE "short courses" in Nova Scotia conducted in the departments under the Provincial Secretary (who is virtually also Minister of Education and Agriculture) may be classified into three groups:

1. The Academic Education Sub-Department.

2. The Technical Education Sub-Department, and

3. The Agricultural Department.

As the latter class are dealt with by the Secretary of Agriculture, Nos. 1 and 2 only need be considered here.

I. In the sub-department of *Academic Education* there were the following kinds of "short courses"—*"A"* those *not* exceeding *four* days, and *"B"* those *exceeding* *four* days:

A.

1. The Eastern Teachers' Normal Institute held four days in the town of Hawkesbury during the week beginning 15 December, 1913. It was conducted under the auspices of the four Inspectors of the six eastern counties of the province, for the benefit specially of the younger and untrained teachers of these counties.

2. The Inter-provincial Educational Convention (N.S., N.B., and P.E.I.) at Halifax 26, 27 and 28 August, 1914. Attendance of enrolled members 413.

3. Cumberland County Teachers' Institute met at Oxford 7, 8 and 9 of April, 1914. Enrolment of teachers 219.

4. Annapolis and Digby Teachers' Institute met at Weymouth, 8 and 9 April, 1914.

5. A Teachers' Institute was held in Middle Musquodoboit, Halifax county, in February, while the short Agricultural Course conducted by the Agricultural College was in progress. The teachers of that district of the county were

nearly all in attendance. Rural Science, that is elementary agricultural and horticultural teaching in the schools, was the leading subject, with exhibitions of school pupils' work in raising cereals, vegetables, poultry, etc.; of collections of insects, injurious and beneficial, plants, weeds, seeds, etc.

6. Teachers' Institute at Caledonia, Queens County, for two days, attended by 9 men and 25 women.

7. Teachers' Institute at Great Village for two days, attended by 10 male and 50 female teachers.

8. Teachers' Institute at Tatamagouche for two days. Present, 3 male and 27 female teachers.

9. Teachers' Institute at Kentville, 17 and 18 December. Fifty teachers present. Model lessons given, observed and discussed.

10. Small Institute at Canso, for two days. Ten women present. School garden exhibitions, one day, 30 present.

11. Short course at Antigonish, for three days, studying farm animals. Present 300 men and 50 women.

12. Poultry show, 2 days, 150 men, 100 women present and prizes awarded.

13. Cereal show, one day, 180 men and 50 women present and prizes awarded.

14. St. Francis Xavier University gave a short history course, 6 days, 45 men and 30 women being present.

B.

The longer short courses were:—

1. The Summer Science School for the Atlantic Provinces, Prince Edward Island, Nova Scotia and New Brunswick, which is subsidized by the three provinces, met during this year in Charlottetown from 7 to 29 July, with a total enrolment of 517. Of these 81 were from Nova Scotia.

This organization started in 1886 in Nova Scotia as a vacation school of practical work in science teaching for the public schools. It is peripatetic, changing its location each year with a view of giving new ground to the naturalists whose services as instructors were originally obtained in exchange for the opportunity of meeting with collaborators in new grounds.

2. The Rural Science Training School at Truro, in affiliation with the Normal and Agricultural Colleges there, met from July 8 to August 6, with an enrolment of 135.

The courses arranged for are completions of the pure and applied sciences course followed for the previous portion of the year in the Normal College, and classes adapted for teachers employed during the school year, who desire to take classes which in two or three years may qualify them for the Rural Science diploma without giving up their schools for a year. The Dean of this training school is assisted by the science teachers of the Normal and Agricultural College, and other specialists, the Director of Rural Science Schools being the most active force on the staff.

II. In the sub department of *Technical Education*, the following short courses were given. They do not include the regular College courses, nor the regular secondary technical classes in operation during the winter months in the various centers of population throughout the province:

NOVA SCOTIA TECHNICAL COLLEGE

Short courses were offered at the Nova Scotia Technical College

covering instruction in the following subjects:—

Land surveying, architecture, structural drafting, steam engineering, machine design, electrical machinery, coal mining, metallurgy of iron and steel, chemistry and assaying.

The requirements for admission to these short courses were simply that (1) the student should have an education equal to that given in the eighth grade of the common schools and (2) practical experience in the line with which the subject deals.

GENERAL REMARKS

Teachers' Institutes have been conducted in the old manner, by specimen lessons taught by the most expert teachers within the inspectorate, assisted by one or more instructors from the Normal College or a neighbouring inspectorate, with discussion of the methods. Hortatory and theoretical speeches and papers are often interspersed. But the dominant attention to special subjects varies from year to year. For some time the teaching of elementary science by object observation and the so-called Nature Study methods have been illustrated and expounded. This has now developed into The Rural Science cult, which is being vigourously developed under the direction of Rural Science schools.

Short Courses of *Domestic Science* and *Mechanic Science* are provided in connection with the regular Normal College work, and as a part of the Rural Science Training School in vacation time July and August. These are not specified in the short courses mentioned.

NEW BRUNSWICK

AGRICULTURE

BY R. NEWTON, B.S.A., DIRECTOR OF AGRICULTURAL SCHOOLS

THE programme of courses as carried out was as follows:—
Newcastle, N.B.,—Four days' course (general)—December 1-4, 1914.

Woodstock Agricultural School:—

Six weeks' course (general)—
January 5—February 12, 1915.

Four days' course (general)—
February 9-12, 1915.

Sussex Agricultural School.—

Two weeks' course in Dairying,
Horticulture, Poultry and Bee-
Keeping—March 2-13, 1915.

dents had the option of taking one or both courses, and it was hoped in this way to encourage a larger total attendance than could be secured by a single general course four weeks in length. However, there was little apparent effect in this direction, and the results on the whole are in favour of a longer general course. Students do decidedly better work, and are less apt to suffer mental indigestion, when they are following a general course rather than having too much of one subject given to them in a short time. Further, students who



A SHORT COURSE CLASS AT AGRICULTURAL SCHOOL, WOODSTOCK, N.B.

Two weeks' course in Live Stock,
Field Crops and Soil Management—
March 15-27, 1915.

Three days' course (general)—
March 25-27, 1915.

The work at Sussex, it will be noted, was divided into two consecutive courses of two weeks each, in which an effort was made to group the subjects in such a way as would be most acceptable and profitable to those who could afford to take only one of the courses. Stu-

remain with us for a longer period acquire to a greater extent the "student spirit"—the spirit of investigation and inquiry which leads them to make better use of their opportunities.

A number of new features were introduced into the courses this year, some with a view to furthering various lines of work which have been undertaken recently by the Department of Agriculture for the benefit of the farming community.

In connection with the drainage campaign being carried on in the province, one of the most serious problems has been to secure a sufficient supply of tiles at reasonable cost. At each course this winter a demonstration was given in the home making of cement tiles.

Last year an organization called the New Brunswick Agricultural Societies United was formed to act as a central purchasing agency for raw fertilizer materials intended to displace the more expensive ready mixed goods, of which New Brunswick uses comparatively an immense quantity. This has been successful in making large savings for the farmers, but there was need of instruction in proper methods of home mixing. Accordingly a demonstration in this work was given at each course, as well as at many other points in the province.

As a part of the fertilizer work was included a discussion of the function of lime in the soil. A machine for pulverizing limestone is now being used by the Department of Agriculture for making demonstrations in various parts of the province, and samples of its product were passed around for examination by the farmers. The value and uses of this material were explained fully.

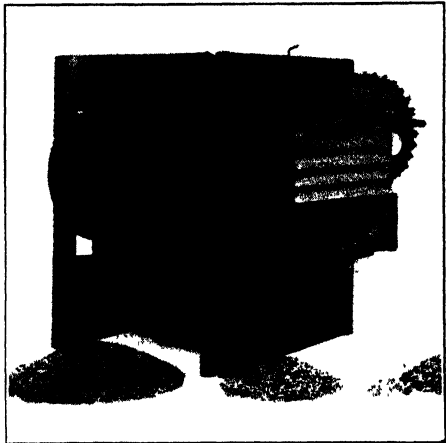
Demonstrations in the killing and plucking of poultry, in the proper use of the fanning mill for grading seed grain, and in the treatment of grain for smut were, along with those mentioned above, included among the newer features of the three and four days' courses.

During the longer courses two new and interesting lines of work were taken up. These were an experiment conducted by the students in the crate-fattening of poultry, and a study of grain samples supplied by the students from seed intended for use on their home farms in 1915.

Three crates of live poultry were fed in different ways, the students keeping a record of the weight of the

fowls when they were put in the fattening crates, the amount and cost of the feeds used, and the weight of the fowl at the end of the course, when they were used for killing and plucking demonstrations. In this way the possibilities of crate fattening were clearly shown, and the students had first hand experience in the weighing out and mixing of feeds, and in the relative value of different rations.

For the study of grain samples we had made to order a working model, complete in every detail, of a fanning mill commonly in use throughout the country. Its dimen-

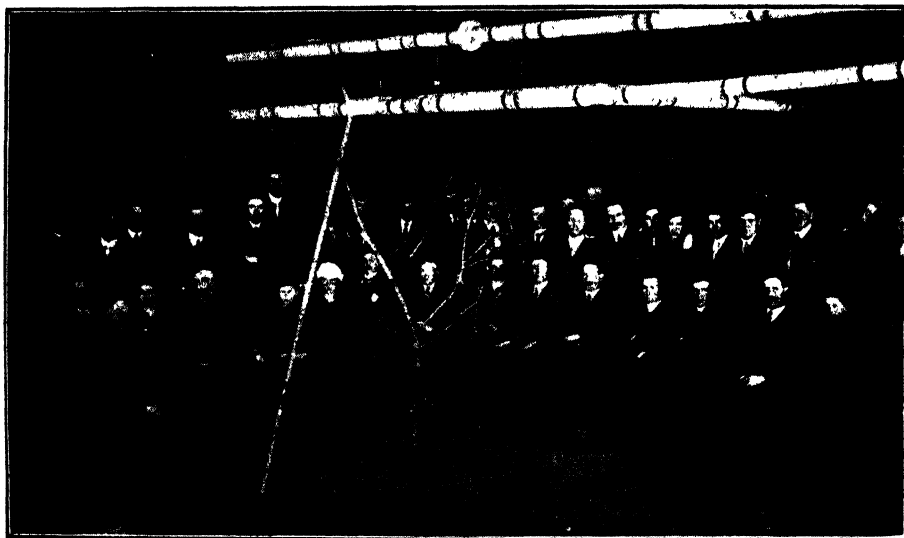


CLASS-ROOM FANNING MILL
Dimensions 22" x 22" x 18"

sions are 22 inches long, 18 inches wide, and 22 inches high. This does the work almost as well as a full sized mill, and is much more convenient for class-room purposes, especially when working with small quantities. The instructor in field crops had the students handpick a pound of the grain as it came from the farm, to find the percentage of large plump seed. Other portions were put through the fanning mill one, two, and three times, and the product subjected to the test of hand-picking. This work brought out strikingly the quality of the seed

grain in common use, as well as the value of the fanning mill for both grading the grain and removing the seeds. The instructor in biology had the students make exact determinations of the percentage of weed seeds, and followed this with a study in identification and methods of control. The samples were also examined carefully for smut, ergot, or other diseases. Our intention was to complete the work with germination tests, but this year time did not permit.

of the course in dairying. For pruning and grafting of apple-trees, visits were paid to nearby orchards, and good-sized trees were also brought into the class-room. For stock judging work, good representatives of the leading breeds were brought into the class-room; also, the members of the class visited the stables of some of the leading breeders of the neighbourhood. Advantage was taken of these visits to make a practical study of building construction and ventilation systems.



DEMONSTRATION IN APPLE-TREE PRUNING

The method of presentation in the three and four days' courses was confined very largely to making practical demonstrations, with explanatory lectures. The remaining lectures were illustrated in almost every case by lantern slides. It has been found advisable that talk, unaccompanied by demonstration or the use of illustration material, should be reduced to a minimum.

In the longer courses half the time was devoted to laboratory work, and the periods were made as practical as possible. Practice for every student in Babcock testing and butter making was provided as part

A bulletin reading course prescribed for the students at the longer courses is a feature worthy of note. Copies of one or two of the best bulletins obtainable, bearing upon each subject of study, were provided in sufficient number so that a complete set could be loaned to each student at the beginning of the course. As some of the bulletins were obtained with difficulty and others at considerable expense, students were required to return them at the end of the course. Those who afterwards desired copies for their private libraries were directed to the proper sources.

A complete description of our courses would occupy too much space, but the instances quoted will be sufficient to illustrate our methods of work. Though this year's experience will enable us to make

several improvements in the details of the work for next season, we feel that our courses of the past winter have, generally speaking, been successful in meeting at least a part of the need of the farming community.

HOUSEHOLD SCIENCE

BY HAZEL E. WINTER, SUPERVISOR OF WOMEN'S INSTITUTES

SO successful was the short course in Household Science held at Sussex during the winter of 1914, for the benefit of the women of rural districts, the Department of Agriculture felt encouraged to hold three courses during the winter of 1915, taking up the following subjects:

Cooking, theory and practice; composition of foods and food values; a short course in waitress' work; hygiene and sanitation; home nursing; sewing; house-planning and interior decoration.

Two of these courses, held in the agricultural schools at Woodstock and Sussex, January 5th to 16th, and February 16th to 27th, respectively, were held in conjunction with the agricultural courses, and were so arranged that students could take advantage of lectures on dairying, poultry-raising and horticulture. The other course was held in the high school at Chatham, January 26th to February 6th. The courses were so simplified that, combining practice with theory, the knowledge gained thereby, could be applied to daily living.

The cooking, house-planning and interior decoration, and sewing classes, were in charge of Miss Imogene Jonah, of Sussex, a household science graduate. As will inevitably happen, greater enthusiasm was displayed in the cooking classes. Each day students were given an opportunity to prepare and serve a meal where the family income, cost of food, sanitary cooking and nutritive value were considered. The correct proportions of each of the

food principles necessary for a day's rations, for those of different age, sex and occupation were emphasized, thus giving the pupil an opportunity to arrange properly-balanced menus.

Attention was paid to the selection of supplies from an economic and useful standpoint, thereby developing an interest in marketing and accounts. Upon different occasions enthusiastic students visited the butcher shops of the town to become familiar with prices and cuts of meat. A very practical demonstration was given by one of the butchers, when he cut several quarters of beef, veal and pork, allowing the students to handle and become familiar with the various cuts.

The lectures on the plan, decoration and care of the house, proved intensely interesting and instructive. Attention was given to the most desirable location for a house, when treatment of soil and proper drainage need to be considered before building, and in order to have a comfortable home, heat, light, water, ventilation and sunshine must be thought of. From day to day lectures on treatment of floors, walls and ceiling decorations, bed-room and living-room conveniences, the proper equipment of the kitchen, etc., led to discussion on the transformation of old houses, the modernization of the farmhouse, and intelligent furnishing when beauty of simplicity should be considered.

The sewing class occupied two hours each day and included lessons in cutting, fitting and embroidery. Many pupils at the beginning of the course knew absolutely nothing

about sewing, but before the course had finished were able to cut out and make plain shirt-waists, skirts, nightdresses, kimonos, etc. At the close of each course, articles completed were exhibited.

The hygiene, sanitation, and home nursing classes were conducted by Miss Hattie Brown, of Fredericton, a graduate nurse. The lectures on hygiene included: Hereditary diseases, baths, care of the hair, teeth, nails and feet, habits, occupation, exercise and rest, clothing, location of the home and out-buildings, water supply, sewers and cesspools, sinks, care of garbage and disposal of same and general cleanliness in the home, constituting lectures on sanitation, which in many cases were followed by very-much-alive discussions. Too much stress cannot be laid upon the importance of every homemaker being able to minister to the sick and to "keep her head and act wisely" in first aid work. The students in these classes showed keen interest by asking intelligently thought-out questions and keeping their pencils continually busy, staying after hours in many instances in order to obtain complete notes.

Lectures, followed by practical demonstrations, made up the home-nursing class and included: Location and furnishing of the sick-room, ventilation and temperature, beds and bed-making, changing of bed linen with the patient in bed, changing or turning mattress with the patient in bed, getting patient up out of bed for the first time, bodily comfort of patient, different kinds of baths, different methods of taking patient's temperature, counting pulse and respiration, care of typhoid patient, disinfection of bed linen and excreta. The making of poultices, mustard plaster, fomentations and their application, band-

ages and bandaging, the application of splints, fracture boxes, artificial respiration, the keeping of charts and notes for the doctor.

A lecture was given on every contagious disease and the care of the patient during sickness, convalescence or death. The important symptom to be looked for was also mentioned. Pupils were warned to be careful of the eyes during a case of the measles and to watch for heart symptoms in diphtheria. Included in contagious diseases were: Scarlet fever, small pox, diphtheria, measles, chicken pox--and mumps. Much emphasis was laid upon the proper method of fumigation of the room and contents after a contagious disease.

The emergency nursing treated with fractures, dislocations, sprains, foreign bodies in the eye, ear, nose and throat, sunstroke, fainting, hysteria, asphyxiation, intoxication, convulsions, shock, common poisons, their antidotes and treatment, burns and scalds produced by acids and alkalies, drowning, frost bites, fire. Not only was the nurse able to give instruction in First Aid, but a round-table discussion brought out many valuable suggestions which in many cases experience had taught the pupils.

The short courses this winter, differed from last in that they were held for the benefit of women's institute members only, and the Department being anxious to give all students an opportunity for individual work, only 40 applications were considered for each separate course. It is a lamentable fact that several applicants were turned away, but these courses have become so popular it is very probable the number will be doubled next winter, thus giving many more members an opportunity to attend.

QUEBEC

BY A. L. GAREAU, OFFICIAL LECTURER, DEPARTMENT OF AGRICULTURE

OKA Agricultural Institute from the 11th to the 23rd of January, 1915. These courses, eminently practical, are divided into four main classes:

- (a) Soils and field crops by Professor I. J. A. Marsan; the vegetable garden by Rev. Father Athanase; the orchard, by Rev. Fathers Honore and Leopold.
- (b) Dairying; allied industries; breeding, by Rev. Father Isidore and Prof. A. Hansen.
- (c) Poultry-breeding, by Rev. Fathers Liguori and Wilfred and Rev. J. B. Allaire; bee-keeping, by the Rev. Father R. P. Maur, Dr. Lalonde and Mr. J. Beauline; sugar-making, by Mr. J. H. Lefebvre.
- (d) Rural economy, by Messrs. I. J. A. Marsan, J. B. Trudel, A. Vanier, G. Henry and J. C. Magnan.

- (a) Growing cereals, grasses and field roots, by Rev. H. Bois and M. F. H. Savoie, professors.
- (b) Dairying and bookkeeping, by Mr. G. Bouchard and the Rev. M. N. Pelletier.
- (c) Fruit-culture and forestry by Rev. P. Levasseur and Mr. A. Letourneau.

Practical demonstrations were given in the laboratory and in the various departments of the farm. There were five lectures every day at which lantern slides were used. The average daily attendance was estimated at 200.

"Semaines Agricoles" of the Provincial Department from the 18th of January to the 16th of April, 1915, under the supervision of M. Al. Gareau, official lecturer.



HORSE-JUDGING DEMONSTRATION AT SHORT COURSE, ST. GABRIEL DE BRANDON, QUE.

There were eight lectures every day, with practical demonstrations in the laboratory and the various departments of the farm. The number of students registered for the courses was 127. Some 30 more, not boarding at the Institute, also attended. Seventy-five applicants had to be refused on account of the lack of room.

Ste. Anne de la Pocatière. From the 11th to the 17th of January, 1915. Here the teaching includes three main subjects:

The programme of these short courses was as follows:

- (a) A chemical and physical study of the soil; under-drainage, ploughing, harrowing and rolling of the soil; crop rotations, by Messrs. A. L. Gareau, C.A., Prof. F. N. Savoie, Leo. Brown, Instructor, Rev. H. Bois, and Prof. G. Bouchard.
- (b) Plant botany; growing of cereals; grasses, field-roots; meadows and pastures, industrial plants, by Messrs. A. L. Gareau, F. N. Savoie, Leo. Brown, Rev. H. Bois and Abel Raymond, B.S.A., agriculturist.

- (c) Judging live stock—horse, cow, swine and sheep; dairying and allied industries; by Messrs. Joseph Paquet, A. L. Gareau, P. Lacoursiere and Philippe Rheault.
- (d) Poultry-breeding, bee-keeping, fruit-culture, vegetable gardening, sugar-making, by Messrs. R. Dumaine, poultry instructor, Luc Dupuis, inspector of apiaries, R. S. Rousseau, H. Cloutier, A. Desilets, J. Magnan, agriculturist and L. J. A. Dupuis.
- (e) Rural economy; agricultural co-operation, cow-testing, by Messrs A. Desilets, B.S.A., and J. B. Trudel of the Dominion Department of Agriculture.

The lecturers were fully equipped with material for the demonstrations. Living specimens were used for the lectures on live stock judging, castration and killing of poultry. In several places the lectures were illustrated with lantern slides. The average attendance was 600 per parish. Two hundred and thirty-eight certificates were granted at examinations. Twenty-four thousand pamphlets on various agricultural subjects were distributed to the farmers during these courses. Lastly, clubs for

women were organized by the professors at Chicoutimi, Roberval, and Champlain, respectively.

At Henryville, county of Iberville, March 9th and 10th, 1915. Courses organized by M. H. Cloutier, district agriculturist. The subjects discussed were the following:—

The co-operative association of seed-grain growers, and the production of cereals, by M. Ls. Lavallee.

Vegetable gardening, by Rev. Father Athanase, O.C.R., professor at Oka, and M. Chs. Peloquin.

The agricultural profession; clover growing; insects and insecticides; plant-diseases and fungicides by Mr. H. Cloutier, B.S.A.

Canning of food products, by Mr. P. Denis.

Practical poultry-breeding and fruit-culture, by A. Desilets, B.S.A.

Veterinary Art, by Dr. J. D. Grothe, M.V.

The attendance was 400 to 500.

The interest taken in this method of agricultural teaching in our province indicates a general awakening of the farming community and augurs extremely well for the future.

OKA AGRICULTURAL INSTITUTE

BY JOHN A. PAYEN, SECRETARY

1. Only one series of short courses has been given at the Oka Agricultural Institute from the 11th to the 23rd January. The subjects taught at these courses are given on the previous page. No lecturers were sent outside.

2. The number of students that were accommodated was about 125; from 75 to 80 requests for admission had to be refused on account of lack of accommodation. No women were received at the short course.

3. No new subjects were taught.

4. Practical demonstrations were

given in the orchards and in the poultry yards, and they were well attended. During the evenings lectures were given with the use of lantern slides, in which the visitors were greatly interested.

5. From three years' experience, we cannot see anything that would necessitate a change of program or of methods; next year we will be able to accommodate a larger number of students as we are enlarging our school. We will then consider if it would be advisable to make changes.

MACDONALD COLLEGE

BY DR. F. C. HARRISON, PRINCIPAL

REGARDING short courses conducted by Macdonald College for the year ending March 31, 1915.

1. The number and kinds of short courses, six were held in the college and twenty-three at outside points in Agriculture and Household Science—each course including a variety of subjects. A special course in agricultural drainage, under the auspices of the Quebec Provincial Department of Agriculture for students

of the various Agricultural Colleges of the province of Quebec, held at the Institute Agricole d'Oka, La Trappe, Que., Ste. Anne de la Pocatière, Que., and Macdonald College—five students from each—to train experts for drainage survey work to be carried on by the provincial Government throughout the province of Quebec.

2. The number in attendance at each course was as follows:—

<i>At Macdonald College:</i>		Men	Women	Total
1914	May 1 to 30—Agricultural Drainage	15	...	15
	Mar. 23 to Jun. 11—Household Science	.	18	18
	Sep. 22 to Dec. 19—Household Science	.	15	15
1915	Jan. 4 to Mar. 19—Household Science	.	27	27
	Feb. 8 to Feb. 12—Horticulture	28	12	40
	Feb. 15 to Mar. 6—Poultry	13	9	22

AT OUTSIDE POINTS:

1915	Jan. 4—Magog, Que	45	...	45
	Jan. 5—Ayer's Cliff, Que	105	...	105
	Jan. 6—Coaticook, Que	95	21	116
	Jan. 7—Marbleton, Que	76	60	136
	Jan. 8—Sawyerville, Que	115	190	305
	Jan. 9—Scotstown, Que	70	52	122
	Jan. 11—Hemmingford, Que	166	104	270
	Jan. 12—Athelstan, Que	71	...	71
	Jan. 13—Kensington, Que	102	...	102
	Jan. 14—Danville, Que	112	...	112
	Jan. 15—Richmond, Que	108	...	108
	Jan. 16—South Durham, Que	150	...	150
	Jan. 4—Knowlton, Que	57	60	117
	Jan. 5—West Shefford, Que	120	75	195
	Jan. 6—Bedford, Que	102	...	102
	Jan. 7—Waterville, Que	91	...	91
	Jan. 8—Lennoxville, Que	168	87	255
	Jan. 12—Chapeau, Que	400	...	400
	Jan. 13—Calumet, Que	61	...	61
	Jan. 13—Dunraven, Que	62	...	62
	Jan. 14—Bristol Corners, Que.	126	...	126
	Jan. 15—Breckenridge, Que	125	26	151
	Mar. 1-6—Cookshire, Que	12	...	12

Total.	2595	756	3351
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3. No new subjects were taken up. The College advertised and was prepared to give a short course in dress-making and needlework to farmers' daughters, to extend from January 4th to March 19th, but the number of candidates for admission did not warrant the course being proceeded

with. Another attempt to introduce this course will probably be made next session.

4. These varied according to the departments offering the courses. The horticultural department exhibited material, photographs, lantern slides, spraying implements,

etc., the cereal department found lantern slides most interesting as they could not take material with them; household science found that more lantern slides should be given.

5. The policy for the period covered has been to reach the farmers through meetings at a number of the smaller centres of the province. The policy for the next session has not yet been determined. The courses have impressed their value on the members of our staff conducting them as they realize from their contact with

the various farming communities exactly what their needs are. It also has given some of the people a better understanding of the work sought to be accomplished by the college.

In addition to the foregoing, Macdonald College demonstrators regularly give instruction in elementary agriculture at some of the rural academies of the province, and organize and take part in meetings of farmers' clubs, etc.

ONTARIO

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

SHORT courses have become firmly established in this province as being one of the most useful and effective means of disseminating valuable information on agriculture and domestic science. This is no doubt due to the fact that as they have been carried on here they appeal both to the eye and to the ear and the actual demonstration of the method serves to emphasize and impress the explanation of the theory. Accordingly a large number of these courses have been held during the past Federal fiscal year taking in all branches of the subject.

Dividing the courses in accordance with their length, I may say that ninety-six short courses extending for a longer period than four days have been held in agriculture and domestic science and have attracted a total of 3,081, while 77 courses of less than four days' duration have attracted a total attendance of something in the neighbourhood of 23,000. With the exception of the courses in domestic science herein referred to, the attendance has been practically entirely of men.

REACHING THE YOUNG MEN

Probably the most important

series of short courses held by this Department during the past few months has been the series held under the direction of the district representatives. Details show that 43 courses have been held in 40 counties and districts with an attendance of 1,114 students.

This series of courses in agriculture, I regard as one of the most important under the Department because they reach out to the young men on the farm who have not had the time, or who have thought that they did not have the time, to take up any special agricultural studies. Their duration has been from four to six weeks, five or six days a week being devoted to the work both morning and afternoon, and occasionally in the evening. The age of the students would range from about sixteen to twenty-six. The course outlined by the district representative includes every branch of agriculture, and students are given a miniature agricultural college drilling. Not only is there instruction in all agricultural subjects, but there is also included instruction in English and in public speaking, the latter in many cases being particularly emphasized. Afternoons are frequently spent in visiting nearby

farms where splendid stock is available for demonstration purposes, while of course the classrooms are equipped with demonstration materials as far as that is possible. The district representative or his assistant, one or both of whom are graduates of the College, are responsible for the instruction, but during the past season they have been assisted by men prominent in various branches who took up the subjects with which they were familiar. Some ten or twelve prominent men were secured and an itinerary mapped out, so that they went from one course to another. In this way the boys were able to secure the advantage of the experience of men who had made a distinguished success in horse breeding, cattle breeding, poultry raising, bee-keeping or some other branch of many-sided agriculture.

These courses in many instances have been held in conjunction with the High School or Collegiate Institute. Frequently accommodation has been secured in the High School building. There has, however, been no arbitrary rule in this connection. When the district representatives were first established they held courses in the towns in which they were located. It has since been found desirable to hold the courses at different points in the county so as to give the boys in all sections an opportunity to attend the class at the minimum of inconvenience. It will be readily understood that most of the students are drawn from nearby farms so that they can go home night and morning. A few come from a greater distance and board in the town. The plan of changing the course from place to place has worked splendidly, and in doing this it has sometimes been found desirable to hold it in a small centre where there is no High School building available. In some cases the Town Hall is rented and fixed up. One of the most successful courses held the past

season was at a four corners in a rural district even away from the railways. It attracted an attendance of almost one hundred for the term and emphasized the wisdom of getting away from larger centres.

The course generally concludes with a banquet or a public speaking contest. In the case of those who are sufficiently near Toronto, an excursion is run to the city and a visit made to the office of the Minister of Agriculture, to the stock yards, abattoirs, fertilizer factories and other places of agricultural interest. The best evidence of the success and usefulness of these courses is the enthusiasm of the young men themselves while they are in progress; in fact in one case where the course had been arranged for a four-week period, they unanimously petitioned to have it continue for six weeks.

Not infrequently the students who have taken these short courses decide that they would like to go further and enter the College at Guelph. Hence, because they deal with the young men at a formative period in life, I think they must be considered one of the most influential agencies in the diffusion of agricultural instruction.

SHORT COURSES AT THE ONTARIO AGRICULTURAL COLLEGE

Short courses have been held at the Ontario Agricultural College during the early months of the year for many years past, and in spite of the number of courses which have grown up all over the country since that time, the College still continues to attract practically to its maximum accommodation, as the following statement will show:

Stock and Seed Judging (all men)	192
Fruit Growing and Apple Packing (52 men and 4 women)	56
Poultry Course (26 men and 7 women)	33
Dairying (53 men and 1 woman)	54
Apiculture (31 men and 8 women)	39
Cow Testing (all men)	43
Ice Cream Course (all men)	14

Dairy Instructors' Course (all men) . . .	10
Domestic Science (Macdonald Institute):	
April to June, 1914	21
September to December, 1914 . . .	23
January to March, 1915	24
Optional students	13
Normal Teacher's Course (1 man and 21 women)	22
Summer Course for High School Science Teachers:	
First Year (12 men and 3 women) . . .	15
Second Year (all men)	13
Summer Course for Rural Teachers:	
First Year (10 men and 53 women) . . .	63
Second Year (5 men and 27 women) . . .	32
Total	667

DOMESTIC SCIENCE THROUGH WOMEN'S INSTITUTES

During the past two or three years courses in domestic science have been introduced through the Women's Institutes, and have proven most popular. During the past year 39 of these courses were held and attracted an attendance of 1,300. The aim is to give a systematic course in food values and cooking, sewing, and home nursing. The courses range from two to four weeks, instruction being given every day



STOCK-JUDGING SHORT COURSE IN ONTARIO

These courses are held in the regular classrooms, and are conducted by the faculty of the college, assisted occasionally by someone from outside. They range in length from two weeks to three months, being for the most part from two to three weeks. No fee is charged and the only expense is for travelling, and for board.

It will be noticed that the above includes the short courses in domestic science given at Macdonald Institute. Of these there are three per year of three months each, and they are very popular, there being always a considerable waiting list.

for four or five days a week. At one of the courses a class of girls was taken in the morning and a class of girls and women in the afternoon. Some attention is frequently devoted to dairy work and poultry matters which are also of great interest to the ladies. The manner in which these courses have developed, and in fact the success which has attended any effort taken hold of by the Women's Institutes, indicates very strongly that there is a great future for the development of work along these lines in the province.

COURSES LESS THAN FOUR DAYS

The most largely attended courses are naturally the shorter ones. Short courses in live stock and seed judging have been held for quite a few years past. During the past year there were 72 of these courses, comprising two or three sessions per day, averaging an attendance of about 300. These courses are held under the Institutes Branch and generally continue for two days. Seed selection and judging is usually considered at the morning sessions, while stock judging is taken up in the afternoon. Types of the animals being demonstrated are secured in the neighbourhood, and brought into the ring and a number of those in attendance are asked to do the judging and give their reasons so as to evoke a lively discussion and thereby impress the points on the minds of the gathering. Occasionally in the evening a meeting is held of a somewhat general nature at which the interests of agriculture are discussed from various standpoints.

During the past winter a new series of courses was held by the Vegetable Specialist connected with the Department, whose work comes exclusively under THE AGRICULTURAL INSTRUCTION ACT. Vegetable Growers' conferences were held at Kingston, Sarnia, London and Lambton Mills with a total attendance of 567, practically all men. These conferences were called with a view to having vegetable growers discuss their problems and exchange experiences. At each gathering addresses were given not only by the vegetable specialist, but by those who have made a distinct success in

some particular branch of vegetable growing. The success of these conferences has proven much beyond expectations and fully justifies enlarging work of this nature another year.

Mention should be made of the short courses in connection with the fruit industry. Except for Box Packing Schools, which continue for a week or more during the winter months, these demonstrations come more under the head of demonstration orchards and demonstrations in individual branches of work, such as pruning, spraying, which are given for only one day at a time.

One other short course may be mentioned, and that is the course held for expert judges. The Department sends out upwards of 300 judges each year to judge in the field crop competitions, and in the various classes at the fall fairs, especially live stock. In order to secure as great a uniformity of standard as possible, it was thought desirable to hold a short course for these judges, and consequently those in Western Ontario meet at the Agricultural College at Guelph for two days early in July, and those from the eastern section of the province meet at the Central Experimental Farm at Ottawa. At both these institutions they are given practical addresses and demonstrations, so that they may fix in their mind the standard for which to look when they are judging a field of oats or barley, or when they go into the ring and endeavour to size up any of the various classes of live stock. The courses have undoubtedly been instrumental in securing a better class of judges.

SPRING AND SUMMER COURSES

CONDUCTED BY THE ONTARIO DEPARTMENT OF EDUCATION

THREE spring courses and seventeen summer courses were conducted by the

Ontario Department of Education, in 1914. The courses in Agriculture and Horticulture were held

at the Ontario Agricultural College, Guelph. The courses in Household Science, Manual Training, Vocal Music, Commercial Work and for admission to the Normal Schools, and the Faculties of Education were held at the University of Toronto. The courses in Art were held at the Ontario College of Art, Toronto. The courses in Physical Culture were held at London, Ottawa and Toronto.

The courses in the Summer Model Schools were held at Bracebridge, Gore Bay, Port Arthur and Sharbot Lake Public Schools, and in Water St. Convent, Ottawa, and in Sturgeon Falls Separate School.

The kinds of courses and the number of men and women in attendance at each course were as follows:—

<i>Spring:</i>	<i>Men</i>	<i>Women</i>
Elementary Household Science	0	13
Elementary Agricultural and Horticultural	2	20
Elementary Art	3	12
<i>Summer:</i>		
Agriculture and Horticulture (Elem.)	16	79
Agriculture and Horticulture (Intermediate)	26	4
Vocal Music (Elementary)	14	17
Supervisor Vocal Music	4	21
Elementary Household Science	0	43
Elementary Manual Training	4	1
Elementary Art	12	76
Supervisors, Art	2	22
Specialists, Art	6	13
Elementary, Physical Culture	59	27
Supervisors, Physical Culture	17	7
Specialists, Physical Culture	30	5
Commercial Specialists	9	8
Normal Entrance (A. & B.)	8	35
Faculty Entrance	29	56
<i>Summer Model:</i>		
Six Schools	28	332

In the case of the Commercial examination twenty-nine men and twenty-five women wrote on the final examination.

MANITOBA

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

AS an important feature of agricultural instruction short courses are long in results. It has been our experience in Manitoba that practical instruction and demonstrations in agriculture and in home economics are everywhere appreciated; that short intensive courses are more popular and better attended than the individual address and that there is no difficulty in getting the people to attend courses which are of a practical nature, and which are presented in a

systematic and interesting manner. In fact, so tangible have been the results in the past and so widespread has been the conversational advertising by those who have attended, that the Manitoba Agricultural College short course has achieved standard reputation. The announcement of a short course in any subject is now a signal for a very prompt and satisfactory response from all over the province among those most interested in that subject, and in some cases the matter of

accommodation and duplication of classes have become factors in short course planning.

This highly satisfactory state of affairs is the outcome of efficiency in staff, in equipment and in executive application. Particularly in the extension service section of the college the results afield have been noticeable and the energetic efforts to carry instruction and demonstration to far-flung localities have uncovered eager appreciation among the people.

held in both "Gas and Steam Engineering." In March also a short course and convention in "Highway Construction" lasted three days. During the month of February a creamery course and dairy convention proved very successful, as did also the short course for weed inspectors, held under the direction of the Departments of Botany and of Field Husbandry. The night school in "Poultry Keeping" during November and December,



SHORT COURSE CLASS IN TRACTION ENGINEERING

AT THE MANITOBA AGRICULTURAL COLLEGE

Among the many successful short courses which have characterized the year's work at the Manitoba Agricultural College may be mentioned a three weeks' course in "Steam Traction Engineering" and a three weeks' course in "Gas Traction Engineering", both held last June. Again in November and March three weeks' courses were

and part of January, was another satisfactory feature.

The extension service section of the Manitoba Agricultural College conducted four separate short courses in twenty different places, a one-week course in "Gas and Steam Engineering" in one centre, six two-day courses in "Home Economics" at five different places on each of six railway lines, and a highly successful three weeks' short course

in "Dressmaking and Millinery" in the district surrounding Portage la Prairie.

ATTENDANCE

As already stated, the attendance at all short courses in Manitoba has been growing rapidly. Owing to present unsettled conditions there was a falling off in the attendance of the engineering short courses, the enrollment for these courses being seventy-eight men--a class of men usually which the college could not reach in any other way. Over one hundred representatives of Manitoba municipalities attended the short course and convention in "Highway Construction," while many others interested in good roads also took advantage of the opportunity presented. The creamery course and dairy convention brought out a complete gathering of the creamery men of the province as well as many representative farmers, while the weed inspectors of the province flocked to the short course particularly provided for them. The night school in "Poultry Keeping" showed an enrolment of seventy-one, representing about fifteen different vocations. Most of these students came out from Winnipeg two nights each week, and a majority of them were keeping poultry in their back yards in the city, although a few had farms of their own and intended raising poultry on a fairly large scale.

In the rural districts about one thousand men and fifteen hundred women were each present at from four to eight lectures, and over one thousand boys and girls attended from two to four demonstrations in the four short courses held at twenty different points. The average attendance at each meeting of the week's course in "Gas and Steam Engineering" was twenty-two. The number of women present at the "Home Economics" two-day courses averaged thirty; a total of 720 attended two lectures. The three weeks' short course in "Dressmaking

and Millinery" brought out ninety women at the initial session, the attendance increasing to 150 before the end of the first week. It was found necessary to hold morning, afternoon and evening classes.

A SUCCESSFUL INNOVATION

Possibly the most successful innovation tried out by the extension service section was the three weeks' short course in "Dressmaking and Millinery," organized in the Portage la Prairie district. The large rural municipal hall was put at the disposal of the ladies and several sewing-machines secured. Among the outstanding features of the course were the following:

1. The women, with suggestions and slight help from the teachers, did all the work themselves and accomplished a great deal more than if they had lacked this special direction.
2. The pleasure of meeting the other women from within a wide radius and of spending several days working together was so evident that it was proposed to make it an annual event.
3. From an economic standpoint the idea was sound. The Department of Agriculture in making possible this course for the women of the farming community accomplished what it would have been impossible for the women alone to have managed, even under the most favourable co-operative methods, because they lived at such a distance from each other.
4. It was proved beyond question that work of a practical and useful nature is fully appreciated by the women of Manitoba.

SEVERAL METHODS TESTED—THE UNIT SYSTEM

Through the co-operation of the Department of Agriculture, the staff of the Manitoba Agricultural College and the Department of Education, the extension service section of the college has been enabled to test the efficiency of several methods of taking college instruction to the rural districts. In presenting the short courses an effort has been

made to organize the work on the unit system which has proved so effective in industrial evening courses and a considerable advantage in the regular courses given at the Agricultural College. To this end the main subjects of instruction—such as “Animal and Field Husbandry,” “Cooking and Sewing”—were divided each into a number of distinct units, each unit complete in itself but so related as to constitute a definite course.

As a direct result those attending the courses derived full benefit from the third or fourth demonstration, even though they had been unable to attend the first or second lecture. Those who attended all the lectures gained a comprehensive knowledge of one distinct part of the subject under consideration—a knowledge which will stand them in good stead the following year when short courses are conducted in the same locality upon another phase of the same subject.

The most popular method of procedure was to take five towns on the same line of railway and visit each place on successive days for four consecutive weeks. In the afternoon separate demonstrations were given for men and women. In the evening the addresses given were of general interest to all. At the latter meetings stereopticon views were used to advantage.

In one series animal husbandry and cooking demonstrations were given first place, while the major subjects in a different part of the province were field husbandry and dressmaking. Each week the regular lecturers were assisted by a specialist on such subjects as poultry or farm mechanics, gardening, home nursing or millinery.

The plan above outlined proved practical in actual operation and met with the approval of those attending. Four courses were handled in this way, possibly the most striking feature being the

interest and enthusiasm manifested. The questions asked indicated that new methods were being discovered and fresh practices introduced into every branch of the farming industry. Many excellent suggestions came from the men and women present at the meetings.

In addition to these lectures the co-operation of the Department of Education made it possible to have several demonstrations among the senior pupils in the schools. Here again the interest taken in the demonstrations by the boys and girls fully justified the experiment.

HOME ECONOMICS

Similarly in connection with the home economics work the senior pupils in the public schools were given lessons on some phase of housekeeping, these taking place in the forenoon and the women's meeting in the afternoon. During March three courses were given where the home economics demonstrator visited the same place twice during the same week.

A number of experiments are being tried out in conjunction with the Department of Education to encourage the teaching of domestic science in the public schools, special attention being paid to the noon hour.

In addition to the short course about fifty individual addresses were given at different places throughout the province in response to requests from such organizations as agricultural societies, literary societies, grain growers, home economics societies and school trustees' associations.

Mr. S. T. Newton, Superintendent of Extension Service at the Manitoba Agricultural College, has many plans and new ideas yet to carry out. It is safe to predict that under his energetic and able supervision the extension work in Manitoba will soon out-distance the splendid record already achieved.

PRACTICAL POULTRY INSTRUCTION

The success of the course in "Poultry Keeping", held at the Agricultural College two nights each week for nearly three months, was due largely to the methods of teaching which were followed. Professor M. C. Herner, of the Poultry Department at the College, has a ways maintained that the best method of teaching is by showing how, rather than by telling how, and he adhered to this with very satisfactory results in connection with this night school in "Poultry Keeping."

In taking up the question of feeding, killing and dressing poultry for market, he had the students do the actual work immediately after the lecture and demonstration. The lecture on the study of feeds was followed by laboratory comparisons of the different classes of poultry feeds. Similarly the practical judging of poultry breeds by the students succeeded the lecture on breeds and breeding. And so on throughout. The success of poultry work depending largely upon attention to details, the value of practical demonstration in poultry short courses is self-evident.

CREAMERY COURSE DEMONSTRATIONS

The new dairy building at the Manitoba Agricultural College is strictly up-to-date in its equipment and, therefore, proved an ideal place for the conduct of a special creamery course. Here also the practical demonstration plan was carried out thoroughly, the course proving so interesting and profitable that at the close, those in attendance presented President Black and Professor W. J. Mitchell and staff with an address, expressing their appreciation of the thorough and practical nature of the course given them. They also hoped to have a similar opportunity afforded them another year.

In addition to dairy lectures and discussions and lectures on "Creamery Management," the short course

included cream separators, butter-making, milk-testing, cow-testing, dairy bacteriology and dairy chemistry. This meant that those taking the course separated milk under varying conditions, and compared the different makes of separators in regard to relative merits and efficiency; that they prepared and used cultures or "starters", in butter-making, and studied their use; pasteurized cream, made and packed butter and compared the results from the use of pasteurized and unpasteurized cream, etc., besides using modern cream ripeners and different types of combined churns; that they graded and scored cream and butter; that they tested milk and cream, prepared and tested composite samples, detected adulterations and used the acidimeter and the moisture and salt tests; that they learned the method of cow-testing and experimented in the laboratory with bacteria and chemicals. In short, each individual student performed his own tests throughout, and, instead of any important point passing in one ear and out the other, it lodged in his head where it belonged.

TRACTION ENGINEERING COURSES

Those who operate ploughing and threshing outfits find that the "Traction Engineering" courses, specially planned by Professor L. J. Smith and his staff, are of the greatest assistance to them. In addition to practical talks and demonstration on the tractors and their accessories, all important related work is thoroughly taken up, such as babbitting, soldering, flue work, pipe-fitting, etc. A part of each day is also spent in the College blacksmith shop, forging, welding and tempering. Talks are given on the construction, care and operation of the separator, etc.

The men who enter for these short courses are possessed of mechanical ability, so that they make

very rapid progress under Professor Smith's popular and painstaking methods of instruction, while the College mechanical equipment, including every make of tractor, makes the courses very complete.

TIMELY DATES FOR CONVENTIONS

There is one phase of the short course which deserves mention particularly, and that is the opportunity which is presented of holding conventions or annual meetings of associations closely related to the subject taken up in the short course. By arranging the dates of such meetings to conform to the short course schedule a pronounced impetus is gained all around, many delegates taking the opportunity of enrolling for the short course and much profitable discussion being aroused.

The "Good Roads" short course and convention in "Highway Construction," held at the Manitoba Agricultural College, March 3rd to 5th, is a case in point. It was the first series of meetings of the kind ever held in Western Canada. The hundred representatives from the municipalities of the province who met daily at the Manitoba Agricultural College, along with many others interested in the Good Roads movement, naturally found much to interest them in a practical way.

Among the many valuable papers presented and discussed it is necessary only to mention the following: "Legal Interpretation of the Good Roads' Act," by E. M. Wood, Deputy Municipal Commissioner for Manitoba; "Road Drainage," by Professor W. J. Gilmore, Assistant Professor of Agricultural Engineering at the Manitoba Agricultural College; (a discussion followed led by A. McGillivray, Manitoba Provincial Highway Commissioner); "Development of Good Roads" by Professor Agg, of the Iowa State College;" "Road Materials" by W. F. Tallman, Winnipeg Street

Commissioner; "Building and Maintenance of Earth Roads," by J. H. Mullen, Minnesota Deputy State Engineer; "Cost of Hauling Over Various Types of Roads," by Professor L. J. Smith, of the Manitoba Agricultural College; "Hard Surfacing of Roads" by P. P. Sharples, Road Expert, New York City.

"Gravel Roads", "Financing Road Work", "Macadam Roads", "The Low Cost Road", "Use of the Road Drag in Maintaining Earth Roads," etc., were other subjects discussed, the latter paper being read by S. R. Henderson, President of the Manitoba Good Roads' Association.

The annual meeting of the Manitoba Dairy Association, held at the college during the time of the creamery short course, provided another example of timeliness. The Department of Agriculture defrayed the transportation expenses of delegates from the different creameries of the province in order that none might be missing and the gathering was very representative. One pleasing feature of the convention was the unanimous expression of appreciation of the advantages to be derived from the grading of cream at the creameries, and paying for the same on a quality basis, as well as the advantages of grading creamery butter by the provincial produce grader. Approval of a continuation of this system in connection with the creamery work and the thorough instruction being given the creamery inspectors was voiced heartily.

MANY MEETINGS PLANNED

During the coming summer it is intended to hold a large number of women's meetings in different parts of the province, when demonstrations in "Cookery", "Dressmaking and Millinery" will be given. Home economics societies will also be organized where possible. During the past three months thirty new societies have been organized and

it is expected that as many more will be established during the summer.

With these organizations in active operation a larger number of women can be interested in the short courses, and even more effective work done than that which has been

accomplished already. Judging by the attendance and the interest manifested on all sides it would seem that Manitoba's present methods of short course instruction are meeting with uniform success.

SASKATCHEWAN

BY A. H. BALL, DEPUTY MINISTER OF EDUCATION

THE following is an outline of the short courses held in Saskatchewan during the year beginning March 31, 1914 and ending March 31, 1915.

1. *At the University- Courses of four days or less:*

(a) Homemakers' Convention, held last week in May, 1914. One hundred and twenty-four in attendance. Topics relating to the home, school and neighbourhood were studied and demonstrations in cooking were given.

(b) Agricultural Societies' Convention, January, 1915, 139 delegates in attendance. Besides discussions on agricultural society work proper, lectures were given on tillage methods, seed selection, live stock selection and breeding, feeding and management; and demonstrations on the selection and judging of cattle, sheep, horses, swine and poultry.

(c) Dairymen's Convention delegates, January, 1915. Ninety-five in attendance. Demonstrations on the selection and judging of dairy cattle; lectures on methods of improving dairy herds and lectures on staple forage crops for dairy cattle in Saskatchewan, and how to produce the same.

COURSES OF MORE THAN FOUR DAYS

(a) *Domestic Science* for young women from the farms. Three weeks in June, 1914. Twenty-one in attendance.

(b) *Engineering* for young men wishing to learn to operate internal

combustion engines. Three weeks in June, 1914, seven in attendance.

(c) *Farmers' Course*. Five days in January, 1915. One hundred and fifty-two in attendance. The topics discussed were tillage, seed, best methods for preparing and managing the summer-fallow, preparation of the stubble land for crops, preparation of prairie land for crops, demonstration on the selecting, judging, breeding and marketing of farm animals, horses, cattle, sheep, swine and poultry; lectures and demonstrations on farm machinery.

2. *At Outside Schools and Colleges:*

(a) Regina College, for young men from the farms taking the winter course there. The College of Agriculture sent four professors to lecture and demonstrate on tillage, crops, implements and live stock, including poultry. Fifty students and 47 farmers were registered for this course.

(b) Regina Normal School, for the teachers a similar course of lectures was put on for five days. One hundred and thirty-four in attendance.

(c) Moose Jaw College, for young men from the farms taking the winter short course there—85 students and 12 farmers registered; a similar course was given to that given at the Regina College.

(d) Saskatoon Normal School, a similar course was given. One hundred and ninety-eight were registered.

3. *Courses of two to four days at outside points:*

These courses were for men and women and, where possible, the school children of the higher grades. Lectures and demonstrations by means of charts and lantern slides on tillage, crops and animals—at the following places:—

	Attendance,	
	Men	Women
Punnichy	52	
Nokomis.	105	55
Zealandia	155	55
Glenside	125	
Broderick	35	
Luseland.	196	50
Hanley	58	57
Grenfell.	96	175
Windthorst	99	
Qu'Appelle	148	86
Creelman	79	50
Arcola.	192	55
Redvers	106	46
Carnduff	91	150

Alameda.	174	65
Weyburn.	96	
Davidson.		150

At nearly every point much interest was manifested. The subjects discussed at these meetings were those that were asked for by the people themselves. The attendance was good at all sessions and equal interest seemed to be taken in all the subjects discussed. No new subjects were introduced, except now and then that of school gardening.

Short courses were asked for at a number of other places, but owing to the lack of qualified men and women for the work we were unable to accede to the requests. Besides the short courses named above, we held over thirty one and two day meetings during the fall in connection with seed grain fairs.

THE SPRING CONDITION OF ALFALFA

NOVA SCOTIA

BY JOHN M. TRUEMAN, PROFESSOR OF AGRICULTURE AND FARM SUPERINTENDENT
AGRICULTURAL COLLEGE, TRURO

THE Alfalfa in this province has come through the winter in splendid condition. We had some sown broad-cast and some in rows on land which had been treated with eight tons to the acre of ground

limestone. This was sown in July 1914. I think every plant in both lots lived through the winter and is growing vigorously this spring. Clover and Alfalfa wintered exceptionally well in this locality.

MACDONALD COLLEGE

JAMES MURRAY, B.S.A., PROFESSOR OF CEREAL HUSBANDRY

THE winter temperatures of 1914-15 in Western Quebec have been slightly above normal. November and December were somewhat colder than normal with from 8 to 18 inches of snow on the ground. January and February were remarkable for the sudden and extreme changes in temperature and the large amount of precipitation in the form of rain. March temperature

was above normal with no extremes. April was unusually warm; growth started very early, and all perennial crops were as far advanced at the end of the month as they frequently are by the 20th of May.

In the various alfalfa experiments at Macdonald College the winter has not added much to our knowledge of hardiness in varieties but it has clearly demonstrated that a covering

of ice is much more destructive than extreme cold.

The weather experienced in January and February—alternate freezing and thawing with occasional heavy rains—resulted in all the depressions in the fields becoming covered with solid ice. They remained in this condition until April. Throughout the winter, notes were made from time to time on the extent of the ice, in order to be able to ascribe to its proper cause, any winter killing that should occur. After two weeks of growth the ice areas were as clearly defined as they were in March, marked as they were by an almost total absence of living plants.

A few strains have suffered rather less than others, but even these are thinned out to such an extent and the plants remaining are so attenuated in vitality, that, from a practical viewpoint, the remaining stand would be considered worthless. From a breeding standpoint it has more value as it clearly indicates that some strains are better able to withstand a heavy covering of ice than others, and are thus more valuable for foundation stock of improved varieties.

It is worthy of note that Quebec No. 1 alfalfa, a variety described in the April number of Vol. 1 of THE AGRICULTURAL GAZETTE, has withstood the effect of the ice better than

any of those of the ordinary type. Planted out last year in the lowest part of the field, where the ice afforded good skating for six weeks during the winter, fully fifty per cent of the plants are alive and thrifty, apparently little the worse of the ice covering. As this variety is primarily adapted to pasture purposes this ability to withstand adverse conditions is of particular value.

The field blocks of alfalfa suffered in the same way as the ranges devoted to breeding work. All pockets in the fields where the water gathered and froze, are practically bare of living plants. In one field too, across which careless teamsters drove for a few days in the winter, there is a strip killed the width of the road. Other fields of Grimm alfalfa, where there were no depressions and the water drained off rapidly and no ice formed, have come through in perfect condition and were, at the end of April, nearly a foot high.

The winter's experience emphasizes the importance not only of having alfalfa growing on land with good underdrainage, either natural or artificial, but also of having it on fields where surface water can drain off rapidly in the winter season.

Had it not been for imperfect surface drainage all our stands of the hardy strains of alfalfa would apparently have wintered perfectly.

ONTARIO AGRICULTURAL COLLEGE

BY C. A. ZAVITZ, B.S.A., PROFESSOR OF FIELD HUSBANDRY

THE spring of 1915 opened in Ontario a little earlier than the average. The usual date for starting the seeding of grain crops at the College is about the middle of April. This year the seeding of the spring wheats and the barleys was completed by April 9th. There was not much appearance of alfalfa growth at that time. On the 19th

of April, however, the alfalfas were making a splendid growth, and any dead plants were quite noticeable. In examining the different varieties under experiment at the college it has been found that all kinds have come through the winter much better than usual. There has been practically no heaving of the plants, and in the hardy varieties it is rather an ex-

ception to find a dead specimen. In some of the tender strains, however, the influence of the winter is somewhat more evident. In one set of alfalfas comprising seventy-one varieties and strains, which have been under experiment for the past six years, the results are very interesting. The hardy strains have come through the last six winters remarkably well, and the tender ones have been badly winter killed. In the average results of percentage of living plants at the present time, we have the following record from seed obtained from different sources: Colorado and Utah, about 6 per cent; Kansas, about 15 per cent; Montana, about 21 per cent; and the common variety of Ontario, about 35 per cent. Under similar conditions the Ontario Variegated and the Grimm each have about 80, and even as high as 90 per cent of living plants. There is a very great difference in the different varieties and the different strains of alfalfa. The Grimm and the Ontario Variegated are both giving satisfactory results.

Not only is it important to have hardy varieties, but it is also important to select land having a clean, mellow, fertile surface soil overlaying a deeply drained, sweet subsoil. It is important to use large, plump seed of strong germinating power. If alfalfa has not been grown successfully on the land the seed should be inoculated with the proper kind of bacteria. For the production of hay twenty pounds of seed per acre is usually recommended for average conditions, although under certain circumstances this quantity might be varied somewhat. From results of experiments at the Ontario Agricul-

tural College we would recommend the seeding according to one of the following methods:

1. Alfalfa seed may be sown on winter wheat in the early spring either on the old snow or on a fresh snow of one or two inches, and no harrowing or cultivation is necessary.

On a suitable seed bed and as soon as the land is sufficiently dry in the spring, alfalfa seed may be sown from the grass seed box placed in front of the tube drill. About one bushel of barley, wheat or rye per acre sown from the tubes of the drill makes a very good nurse crop. After the seed is sown the land should be harrowed lightly.

3. Alfalfa may be sown alone in the month of July on a summer fallow providing there is sufficient moisture for good germination.

Alfalfa should never be pastured during the first year, and seldom, if ever, afterwards, as pasturing very frequently destroys the plants. The crop should be cut for hay or for green fodder in the following year after the seeding takes place, as soon as it starts to bloom. Care should be taken to retain as many of the leaves on the stems as possible, and to protect the crop from rain. In many places in Ontario the alfalfa will produce three crops of hay per annum. The third cutting, however, may be used to advantage for mixing with corn when filling the silo, as this forms an easy method of handling the green alfalfa in the autumn and also of improving the quality of the corn silage. In some localities, hay may be obtained from the first crop, and seed from the second crop in each season, and for a period of several years.

MANITOBA

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THE twenty-two alfalfa plots grown under the direction of the Manitoba Department of Agriculture during the past three years were sown on summer-fallowed land, which is the only preparation that we recommend or practice in this province.



ALFALFA AT THE MANITOBA
AGRICULTURAL COLLEGE

Although not all of these plots have been inspected as yet, enough of them have been examined to justify the statement that in spite of the very limited snowfall in some districts they have come through the winter in good shape. At Baldur, for instance, where there was

scarcely a trace of snow, every plant appears to have wintered safely.

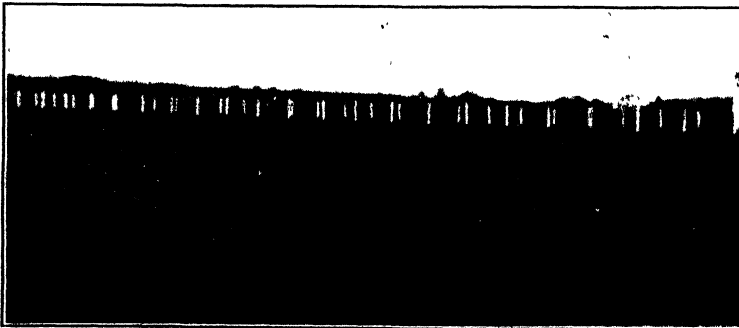
The location of these alfalfa fields vary greatly in altitude and in character of soil; but apparently all of the districts give satisfactory results with alfalfa. The field on the Manitoba Agricultural College Farm in the Red River Valley perhaps is most advanced at this date, a condition no doubt attributable to the



ALFALFA GROWN FOR SEED
DEMONSTRATION FARM, NEEPAWA, MAN.

low altitude and the sheltered location of the field.

Turkestan was the seed used for



ALFALFA AT THE MANITOBA AGRICULTURAL COLLEGE DEMONSTRATION FARM
THICK STAND TEN INCHES HIGH IN SEPTEMBER, YEAR OF SEEDING

all of the plots sown for fodder. At Neepawa one seven-acre field was sown for seed purposes with Grimm's and gave a good yield. (See THE AGRICULTURAL GAZETTE, Vol. II, No. 1, January 1915, Page 73).

For fodder purposes we have always practised seeding with a drill

in rows from six to seven inches apart, using fifteen pounds of seed to the acre, and inoculating either the seed or the soil with bacteria. Our work has been more along the line of demonstration than of conducting experiments.

SASKATCHEWAN

COLLEGE OF AGRICULTURE

BY J. BRACKEN, B.S.A., PROFESSOR OF CEREAL HUSBANDRY

THE past winter was one of the mildest we have experienced in this part of the province, but the ground was bare until very late in the fall and the snow went away early in the spring. As far as we can tell at this time, our alfalfas are all alive. Those sown in wide rows have come through better than those sown thickly, while those left with a considerable growth for protection last fall are much more vigorous at the present time than the same varieties that were cut late last summer.

The Siberian varieties -both Falcata and Media and the various strains of Grimm have come through almost perfectly, but are rather less vigorous than they were a year ago.

The Common or Purple Blossomed sorts, which were sown in rows, have been thinned out to a considerable extent but a fair stand of each still remains.

Three varieties out of four hardy winter wheats are completely gone. About 50 per cent, or rather more of Buffum's No. 17, is alive and vigorous. Our winter rye all came through perfectly, even after adverse conditions for germination last fall, with the exception of the farm crop which was pastured late in the fall. The last mentioned is very thin this spring, the stand is hardly thick enough to leave for a crop.

Our clovers have stood the winter better than in any other year since 1910 and 1911.

ALBERTA

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

I have just completed an inspection of our alfalfa at the following places: Stony Plain, Olds, Claresholm and Medicine Hat, and find that it never was in better shape at this time of the year. It is a beautiful rich colour standing from four to six inches high and as we have had plenty of moisture in every part of the province, I feel that there should be a splendid stand by the time it is ready to cut.

On the Demonstration Farms we covered all the alfalfa with strawy manure last fall, and early in the spring it was drag-harrowed, and, where the alfalfa was considered too thick, it was disced and afterwards drag-harrowed. This treatment does not seem to have checked the growth materially and there is no question that it has destroyed a good many of the small weeds that have just appeared.

For the last two years all the alfalfa has been sown on the Demonstration Farms in rows thirty inches apart and with about three pounds of seed per acre. The ground has been subsoiled about ten inches deep and manured with well rotted manure the year previous to sowing.

On account of the success which we have had on every Demonstration Farm, we feel reasonably confident that alfalfa can be grown in any part of the province if proper care is taken in every operation in connection with the cultivation."

BRITISH COLUMBIA

BY W. NEWTON, SOIL AND CROP INSTRUCTOR

THE past winter in British Columbia has been exceedingly favourable for alfalfa. With no exception was there any marked winter-killing on the demonstration plots of the Department of Agriculture, although those plots are situated at points throughout the agricultural districts of the province. Our results would indicate that where a Grimm strain, or equally hardy alfalfa is used, the alfalfa growers in this province need not fear any danger from winter-killing. Our conclusion may not be final for the past winter was exceptionally mild.

The plots at Kamloops and Bridesville show the greatest vigour. This is particularly encouraging for at these points the hot weather of midsummer make it impossible to successfully grow the common clovers. The plots on Vancouver Island and the lower mainland are showing considerable promise,

although not to the same extent as those at the interior points.

Under coast conditions where the alfalfa does not make such a vigorous start, considerable difficulty has been experienced with the weed and grass nuisance. For this reason all future seedings will be done in drills wide enough apart to allow of intertillage.

The experience of the past two years has taught us that in districts where alfalfa is an uncertain or experimental crop, time will be saved by sowing in drills wide enough apart to cultivate between the rows. Weeds and grass are thus almost completely under control. Similarly, in districts where drought-killing is liable to occur, moisture conditions in the soil are more under control. In any case the chances are increased for success, and for demonstration purposes, a plot sown in this manner is very attractive.

With a view to meeting the widespread scarcity of hands, farmers are naturally arranging to economise labour as far as possible, and to use to the best advantage such assistance as they may be able to get. In one district it is stated that some lea-ploughing will be abandoned, grass taking the place of grain, while grain again may be substituted for green crops, and in others it is expected that it will be found necessary to do the spring work in a less thorough manner than usual. It is hoped, however, that, as a result of the full consideration that is now being given to the problem of the labour supply in various responsible quarters, farmers will be able to carry through the work of the season without undue disturbance of their normal practice.

Board of Agriculture report for Scotland, April, 1915.

IMPROVEMENT IN EGG PRODUCTION BY BREEDING

MACDONALD COLLEGE

BY M. A. JULL, B.S.A., MANAGER AND LECTURER, POULTRY DEPARTMENT

BREEDING work for improvement in egg production has been carried on for a number of years by the Poultry Department. A definite pedigree system of selection and breeding, however, has been adopted comparatively recently and to date, no absolute results have been obtained.

The breeds which are being used include: Barred and White Plymouth Rocks, Single Comb Rhode Island Reds, White Wyandottes and White Leghorns. Chief attention has been given to Barred Plymouth Rocks.

The number of birds in each breed being used in this work are:

Barred Plymouth Rocks	500
White Plymouth Rocks	10
S.C. Rhode Island Reds	50
White Wyandottes	50
White Leghorns	50

Systematic improvement was undertaken in the spring of 1913. Two Barred Plymouth Rock male birds of known pedigree were used in establishing two line bred strains which became the foundation flocks for subsequent improvement.

SHOWING METHODS OF MARKING CHICKS

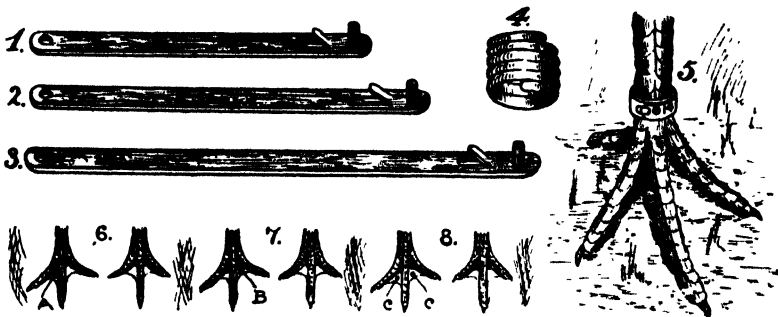
Nos. 1, 2 and 3 show different sizes of leg bands for different sizes of birds.

No. 4 shows a coloured celluloid leg band. Combinations of coloured bands can be used in poultry breeding work. Also these bands can be used to distinguish fowls of various ages.

No. 5 shows a numbered leg band on the leg of a fowl. These bands are used in breeding work.

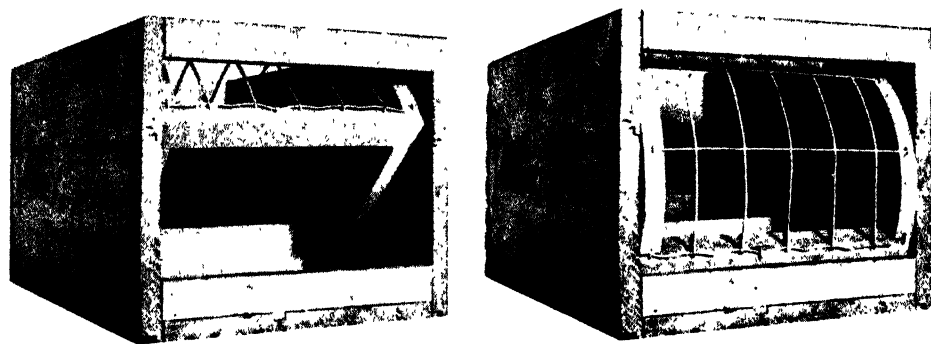
Nos. 6, 7 and 8 show three pairs of chicks' feet, illustrating the various ways in which the webs of the feet are punched. Pair No. 6 is punched in the outer right web at A. Pair No. 7 is punched in the inner right web at B, and pair No. 8 is punched in the outer and inner right webs at C. Sixteen combinations of punches may be used.

Poultry can also be marked very effectively by inserting a band in the wing. This method is permanent, and is one of the most effective methods employed.



METHODS OF MARKING CHICKENS

TRAP-NEST IN USE ON POULTRY DEPARTMENT, MACDONALD COLLEGE



This is a double compartment nest with a balanced cylindrical door which closes behind the hen as she enters the nest.

This photograph shows the nest closed. The door might be made of finer mesh or of slats.

RECORD CHARTS

The following are the charts used by Macdonald College for keeping records of laying, hatching, mating, etc.:

Macdonald College—Poultry Department—Egg Records

HOUSE NO		MATCHED		CHICK BAND NO		BREEDER NO.		BIRD NO.																								
PEN NO		VARIETY		ORIGINAL NO		OUT OF MATING																										
DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTALS
NOV																																
DEC																																
JAN																																
FEB																																
MAR																																
APR																																
MAY																																
JUN																																
JULY																																
AUG																																
SEPT																																
OCT																																

MATING OUT OF WHICH GAME		MATING NO		BAND NO		BREEDING HISTORY YEAR		NOTES	
MOTHER						MATINGS			
MOTHER'S MOTHER						PEN NO			
MOTHER'S FATHER						BREEDING INDEX			
FATHER						BODY WEIGHT			
FATHER'S MOTHER									
FATHER'S FATHER									

B BROODY

O—OVER BROODINESS

X—BROKEN EGG

N ON NEST

E EGG EATEN

CHART FOR EGG RECORD

Macdonald College—Poultry Department—Hatching Record

[illegible]

CHART FOR HATCHING RECORD

Blackwood College--Poultry Department--Incubator Record

[illegible]

CHART FOR INCUBATOR RECORD

ONTARIO AGRICULTURAL COLLEGE

BY W. R. GRAHAM, B.S.A., PROFESSOR OF POULTRY HUSBANDRY

WORK along this line was started with Barred Plymouth Rocks in the winter of 1907 and 1908. A little attention has been paid to White Wyandottes, Rhode Island Reds, Buff Orpingtons, and in the past two years, work has been started on a moderate scale with White Leghorns. The work done to date on all breeds, except Barred Plymouth Rocks, is not of such a nature to be of any value in assisting a study of the problems of egg production.

Before one gets far in a study of this question there are several other factors that have to be considered very carefully and, moreover, are so closely associated with increased egg yield from a commercial standpoint that one is frequently obliged to put forth special efforts to take care of these factors.

Our experience has been that the following factors should be carefully considered and maintained if one's efforts towards increased egg production are to be of commercial value. These factors are—constitution, hatching power of eggs, living power of chicks, early maturity, and one should consider size and colour of eggs.

Our work to date would indicate that the above factors are inherited, and, if not seriously considered in matings, are liable to give much trouble and unsatisfactory results, and, furthermore, after seven years of breeding, we have gotten to the point of where we think we begin to see how these factors may be at least partially controlled or produced in the following generations; or in other words, we are possibly in a position now to start breeding operations.

During the winters of 1907 and 1908 a small number of high laying hens with trap-nest records were

purchased from two sources, together with a male from each source. The Plymouth Rocks on the poultry plant at this time had been maintained largely as being fair representatives of the breed as seen in the Show Room. No effort in particular had been paid to egg production. The following season a number of pullets were raised from all lines, but the birds were used for house and feeding tests, and as the individual records were not kept, the first year's breeding cannot be given.

The season of 1909 really is the beginning of an effort to breed or egg production. It might be well to state here that these birds of high laying were of such inferior colour and shape that it was almost impossible to realize that they were worth while breeding. The first year's breeding demonstrated that these birds, particularly the offspring from one male were vastly superior over other lines for early maturity, or for market purposes.

During the winter of 1909 and the summer of 1910 there were 68 pullets that completed a year's record, that is that were in trap-nested pans from October 1st, 1909, to October 1st, 1910. The birds were hatched in April and early May. They produced an average of 151 eggs each for the year. No birds of the old line were trap-nested that year.

In the spring of 1910, an effort was made to hatch and rear under the same conditions a number of pullets from one of the old line males, and a pen of the same line females, and also a number of pullets from a bred-to-lay male and the same line of females. We were able in October to put into one house a pen of pullets from each line or male. The results of this year's trap-nesting of

these two pens were that the old line laid an average of 122 eggs each for twenty birds that completed the year, and the bred-to-lay line produced an average of 176 eggs each for eighteen birds that completed the year. This year's results suggested the idea that the male might be an important factor in breeding for egg production.

In 1912 Maine Experiment Station published a paper setting forth a theory as to how egg production was inherited. We then began to check up our back breeding with this theory, and it offered an explanation to many results we had gotten from various matings and suggested a line of breeding operation in earnest. Since then we have been trying to get the males and females rated as to where they stand to put the theory to a practical test as to whether one can produce a line in which all females are good layers, and maintain this line. This work will probably take another five years before we can state definitely one way or the other.

During the season of 1913-14 there were 81 bred-to-lay pullets that were hatched in April and early May, and 12 pullets of the old line similarly hatched and reared, that completed a year's record. The 81 bred-to-

lay pullets averaged 162 eggs each and the old line 127 eggs each.

The results so far would indicate that the males have more ability to transmit laying qualities than the females, especially is this true in regard to winter egg production, and, moreover, to properly test males or females, the chicks should be hatched by May 20th. It is to be understood that proper feeding, housing, rearing, and attention are necessary adjuncts.

In conclusion, our effort at present is one of testing females, mating them to sons of good hens and desirable sires. Only in this way can we see how it will be possible to get a high percentage of sure producers. What we need is a plan to eliminate the twenty-five per cent of average producers now bred.

We have on several occasions bred poor laying hens of the old line to good males, and the resulting offspring in pullets was satisfactory; also a few good laying hens to old line males and the resulting pullets were not any better layers on the average than the old line. We have been able to select at least one male from the old line that was a good average producer of fairly high layers.

MANITOBA

BY M. C. HERNER, B.S.A., PROFESSOR OF POULTRY HUSBANDRY

BREEDING and selecting for improving egg production was started at the Manitoba Agricultural College only a little over a year ago. Up to that time the equipment for conducting such work was not finished and nothing permanent could be done until all the equipment required for carrying on this work successfully had been installed.

The Poultry Department of this college is but little more than three years old; hence, the data on this

work must necessarily be more limited than that of the older departments of other institutions.

During the past year we trapped the entire flock of 750 hens kept on this plant. These records show great variation in the egg yield of different hens of the same breed. High and low producers were found in all breeds. Some pens were fed at a loss, while others again showed large profits. The highest pen average was given by 20 White Leghorn pullets, which averaged 142 eggs

each in ten months beginning December 1st, 1913, and ending October 1st, 1914. The heaviest individual layer in this pen laid 166 eggs in this period, and the second highest 159. The second highest average was made by 20 White Leghorn pullets, each of which averaged 124 eggs in these ten months. The third highest average of 116 eggs was made by a pen of Barred Plymouth Rocks. A pen of 20 White Leghorns stood fourth highest with an average of 115. Another pen of 20 White Leghorns came fifth with an average of 105 each, and a pen of White Wyandottes stood sixth with an average of 100 each, for the ten months. This trap-nest work was carried on with White Leghorns, Barred Plymouth Rocks, Partridge Rocks, White Wyandottes, Silver Laced Wyandottes, Rhode Island Reds and Buff Orpingtons.

STANDARD OF PRODUCTION

The standard of production is set at 100 eggs in ten months, and any hens, which, in their pullet year do not come up to this are weeded out. By following this system, we hope to gradually reduce the percentage of poor layers in the flock.

The work last season was far from satisfactory in that the poultry plant was not completed. The hens had to be confined in the houses until the 17th of September when the yards were completed. This necessarily meant a relatively low egg production, so, therefore, the records as here given are not by any means considered high. With these disadvantages removed this season, we hope to show considerably better records at the end of the year.

Regarding the average egg yield of each breed, we do not consider our records of any value in that the records of some breeds which stand confinement better would naturally be a good deal higher than the others. After all breeds are given the proper

conditions in so far as it is possible, then production must count either for or against a breed.

This year we are again trap-nesting every one of the 900 laying hens and the records in winter egg production of the different breeds are much similar to those of last winter. The White Leghorns again come up high. Out of 425 pullets of this breed, the best 25 gave a 61 per cent egg yield from November 29th, 1914, to February 16th, 1915, a period of 80 days. The entire flock of these 425 pullets gave a 35 per cent yield during February. Judging by this performance, I would say we have made some progress on last season's work; but, at this early date, it is difficult to state, except in a general way, what improvement has been made.

The weather conditions this year were quite favourable for a good winter egg production. January was the coldest month, the temperature inside the poultry house often going below zero, the lowest being 8° below. The other months were favourable for good egg production.

METHOD OF SELECTION

In breeding for improvement in egg production, we select male birds from our heaviest layers in the different breeds. These are mated back to the heaviest laying hens and in this way we hope to make a permanent improvement. The record of performance is, however, not the only requisite, as a bird must be strong, healthy and vigorous before we use it in the breeding pen. New blood will be brought in from time to time if required. Shape or type and colour are a secondary consideration. The record of performance, along with vigour and vitality, is the thing that counts for the most.

This season we are selecting the breeders on their record of performance and also on their ability to produce eggs that are fertile and eggs

that will hatch. The percentage of fertility so far has been exceptionally high, the highest point reached being 94 per cent in the White Leghorns in March. We also find that certain individuals lay infertile eggs almost continually, and we endeavour to eliminate these as rapidly as possible, thus bringing up the percentage of fertility. The same thing holds good regarding the

hatching quality of eggs.

These are briefly the lines of work as we are conducting them on this plant at the present time. How much we can enlarge on the present system will depend largely on the results obtained during the next few years. We have simply laid our foundations and are now proceeding to build on the same.

PRINCE EDWARD ISLAND

RECENT LEGISLATION

SEVERAL acts regarding land were passed at the recent session of the Island legislature, but only two became law having a direct bearing upon agriculture. One of these was amending "An Act to Incorporate the Prince Edward Island Co-operative Egg and Poultry Association" and the other to incorporate "The Prince Edward Island Co-operative Seed Association." The noteworthy feature is that in these two acts we have further proof not only of the progress of the co-operative movement, but that its onward course is general all over the land. The objects of the Co-operative Seed Association are set out to be the production and marketing of improved strains of high producing stock seed. The incorporators are some of the leading agriculturists of the Island, including the Secretary, Mr. Theodore Ross. It is provided that any farmer may become a member and shareholder. A number of bills were passed relating to the fox-breeding industry and one other measure affecting rural

life. This latter was an act incorporating the Rustico Rural Telephone Company, Limited, which is intended to give dwellers in a large section of the Island running from Rusticoville the advantages and privileges of a telephone service.

AGRICULTURAL ESTIMATES

The estimated expenditure for agriculture is as follows:—

Commissioner, part salary	\$ 900
" travelling expenses	350
Professor of Agriculture,	1,400
Professor of Agriculture, travelling expenses	300
Departmental expenses and contingencies	1,900
Printing stationery, etc	1,000
Exhibitions and live stock judging	9,250
Farmers' institutes and educational work	1,900
Encouragement of field crops, horticulture	3,300
Dairying and poultry raising	
Vital statistics	750
	<hr/>
	\$21,050
Less:—	
Estimated receipts through Department.	1,600
	<hr/>
	\$19,450

QUEBEC

HISTORY OF AGRICULTURAL CLUBS

BY H. NAGANT, EDITOR LE JOURNAL D'AGRICULTURE

THE idea of the formation of agricultural clubs in the province originated in 1869 when the first number of the *Semaine Agricole* was published, but several years elapsed before their real influence was felt.

In 1875, a distinguished agriculturist, M. Ed. A. Barnard, Director of Agriculture, noting the lamentable condition of agriculture in the province, recommended agricultural teaching by means of lecturers; he also recommended union and co-operation among the farmers, urging them to meet to study the means by which improvements could be brought about in their own interests. It was at that time that the first agricultural clubs of the province were organized in the parishes of Ste.-Anne de la Pocatière, Chambly, St.-Michel Archange, St.-Jacques l'Achigan, St.-Edouard de Lotbinière, Joliette and various others. As every new organization has to do, they had to fight against a spirit of inertia. The beginnings were difficult and progress was slow until 1881, when impetus was forthcoming from the Roman Catholic clergy, who are invariably found in the first place in any movement for the improvement of the material and moral welfare of the population.

In 1886, the Bishops, meeting in Council at Quebec, blessed the agricultural clubs and recommended their extension. In 1887, the first congress of agricultural clubs, including a thousand persons, was held at Trois-Rivières.

In order to insure the efficiency of the work of the clubs and to make their progress permanent, the

Government thought it advisable to make strict regulations and to afford help by means of subventions. This was in 1893, the Department of Agriculture giving to the clubs an official organization, which, with the exception of a few minor changes, is still operating with complete success.

The first annual convention of the agricultural clubs, placed under the official jurisdiction of the Government of Quebec, and which numbered 425 at that time, was held in 1894 at St.-Hyacinthe. To-day there are 689 agricultural clubs in the province with 65,324 members.

CONSTITUTION OF THE CLUBS

Although the agricultural clubs and the agricultural societies work towards the same object, viz., to promote agricultural progress in all the branches of farm management, the two organizations differ in their field of action and also in some of their duties. The agricultural clubs are established in each parish or township and include only a limited number of farmers, whilst an agricultural society takes in a whole county. To become a member of the club, one has to pay an annual fee of \$1, but members can subscribe a higher amount if they like.

Each club is entitled to an annual subvention, not exceeding 50 cents per member, and the total grant to any club must not exceed \$50, or be under \$25. No subvention is granted to a club unless \$30 has been subscribed and paid to the treasurer by at least twenty-five members. In addition to this regular subvention, the Department of

Agriculture also grants additional subventions as follows, to encourage the use of registered animals of good quality for breeding purposes:

For one or several bulls kept for breeding for at least 9 months	\$50
For one or several boars	15
For one or several rams	15

The receipts of the club are derived from members, fees, government grants and revenue from the use of breeding animals, and of agricultural machinery, etc. These receipts are spent in prizes for various competitions: farm crops, good farms, ploughing, gardening, etc., and in the purchase of registered animals and of improved agricultural machinery, in increasing the capital of breeders' syndicates, the promotion of co-operative societies and encouragement of the construction of modern poultry houses. In new settlements, some clubs spend their revenue in organizing clearing land competitions, which create emulation among the settlers.

CLUB ADVANTAGES

The members of the club receive free of charge, the official JOURNAL OF AGRICULTURE, which serves as a medium between the Quebec De-

partment of Agriculture and the agricultural associations.

Members of the club receive seeds of grasses and leguminous plants, and chemical fertilizers, for a value equal to the amount paid in fees. In this way the members' fees are refunded to them. This seed which is of the best, is purchased wholesale and distributed by the club.

In 1913 the agricultural clubs purchased grass and clover seed to the amount of \$111,042.38. They also spent the following:

For the purchase and maintenance of breeding animals . . .	\$46,243.08
For the purchase of agricultural machinery	7,651.57
For prizes in various competitions	5,512.58

The expenses of administration, salaries of secretaries, expenses of judges in competitions, maintenance of agricultural machinery, are also paid by the club.

To sum up, our 689 agricultural clubs are doing good work. The remarkable success that has been achieved during the last twenty-five years in agriculture in the province of Quebec is, in great measure, due to their systematic and efficient organization.

MACDONALD COLLEGE

A BRIEF REPORT ON SOME PHASES OF ENTOMOLOGICAL INVESTIGATIONS

BY E. MELVILLE DUPORTE, B.S.A., M.Sc., ASSISTANT IN BIOLOGY

UNDER the provisions of the Agricultural Instruction Act, the writer has been engaged during 1914 and part of the previous season, in conducting investigations on the life history, habits, parasites and methods of control of various injurious insects.

Following is a list of the chief problems which are being undertaken, or which we hope to undertake in the future:—

Life History and control of the Bud Moth (*Imetocera ocellana*) in Quebec.

Flea Beetles of Quebec.

Insects affecting clovers and alfalfas in Quebec.

Wireworms and white grubs.

Injurious leaf hoppers and tree hoppers.

The crickets occurring in Quebec, their habits, life histories and economic importance.

The economic importance of certain groups of Diptera or two-winged flies.

This is an extensive programme, and must of necessity extend over several years. The reason for thus laying out beforehand such a wide field of investigation lies in the fact that while the greater portion of the worker's attention is given to one problem, he is able incidentally to collect considerable data on other subjects which will be valuable when he turns his attention more particularly to these subjects.

The work of the U.S. Bureau of Entomology, and of other entomological investigators has revealed to us the possibilities which lie in the utilisation of their natural enemies to control insect pests. A fuller knowledge of the parasites of injurious insects, their relation to the hosts and the factors which disturb the balance between parasites and host, will be of great value in rendering more effective the continuous fight against our insect foes. Not only shall we be able to breed and disseminate the parasites of the injurious insects, but a knowledge of the inter-relations of host and parasite and of the factors which enable one or the other to gain the ascendancy will probably render it possible for us in many cases to anticipate, and thus be prepared for a sudden increase in the numbers of destructive insects. For this reason the writer has been paying special attention to the parasites, both insect and bacterial, of the pests on which he is conducting investigations. It may be of interest to note some of the work that has been done in this connection. Four parasites of the bud moth have been found. Of these at least three have not been described before as parasites of this insect. The most important is the egg parasite *Pentarthron minutum* Riley. This is a very minute chalcid fly which lays its eggs on the egg of the bud moth. The larval and pupal stages are passed within the host egg, the contents of which are of course destroyed. Occasionally two parasites may develop within

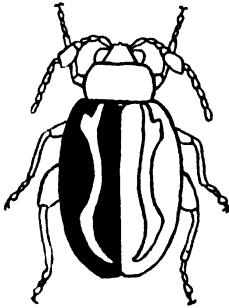
the same egg, but in nearly every case there occurs but one *Pentarthron* larva in each parasitised egg. In fact the small size of the bud moth's egg renders the development of two parasites difficult, and usually, in cases where two eggs are laid in the host, one develops at the expense of the other. I have, however, found two healthy pupae in the same egg. Parasitised eggs can be readily recognised as they turn a shiny black. Last season counts from various orchards in this vicinity gave an average of 77 per cent parasitised eggs.

Last year efforts were made to isolate the causal organism of a disease which effectively destroyed large numbers of tent caterpillars. A bacillus was obtained which, when inoculated from pure cultures into the tent caterpillars, produced death within twelve hours. Further experiments will be conducted this year to discover whether the organism retains its virulence when grown for a year in artificial culture, and whether it will have any practical value in the control of the tent caterpillar when it is sprayed on the food plants of these insects.

Miss Zae Northrup of the Michigan Agricultural College published last year a bulletin giving the results of her investigations on *Micrococcus nigrofaciens*, a disease of the white grub. Previous to the publication of this bulletin the authoress sent a culture of this organism to Dr. F. C. Harrison, who gave me this culture with the suggestion that I test its pathogenicity to the species of white grubs occurring here. Few white grubs could be obtained in the local soils last year, and these all died of a disease, the symptoms of which were similar to those described by Miss Northrup. From the dead tissues an organism similar to *M. nigrofaciens* was isolated, so that this disease is probably present in Canadian soils. The writer is anxious to continue these experiments in

order to verify last year's results and also to discover the extent to which the disease occurs in Canada and its effectiveness in the control of white grubs. I therefore request all readers of THE AGRICULTURAL GAZETTE who are in a position to do so to send me during the present season living specimens of white grubs occurring in their localities. The kindness of all who accede to this request will be deeply appreciated.

Attention should be drawn to the following insect pests which are not generally known in Canada.



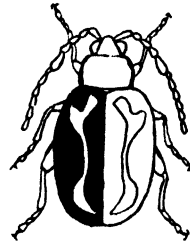
PHYLLOTRETA SINUATA STEPH., MALE

The Wavy Striped Flea Beetle (*Phyllotreta sinuata* Steph.) was observed in this locality during 1913 and 1914. There are no previous records of its occurrence in Canada as a pest. The adult greatly resembles the common striped turnip flea beetle (*Phyllotreta vittata* Fab.) both in appearance and in food habits. It is, however, larger than the latter insect and there are other differences such as the shape of the yellow stripe on the wing covers, and the form of the antennæ of the male. These differences may be observed by a comparison of the accompanying figures. The larva is a small green grub with a dark brown head and numerous black spots. It has been found mining in the leaves of the cress and radish and both larvæ and adults may be found feeding together. The pupa is a small yellow form quiescent in a cell in the soil. A small parasitic hymenop-

teron (*Pleurotropis* sp.) has been reared from this insect.

The control methods employed for the turnip flea beetle, such as the application of arsenical poisons, will doubtless hold this insect also in check.

Another insect observed in Canada for the first time in 1913 is the *Clover Seed Chalcid* (*Bruchophagus funebris* Howard). It was found in this locality by the writer, and also at the Central Experimental Farm by members of the Entomological Branch. The adult is a small wasp-like black chalcid fly. It may be observed flying among the heads of



PHYLLOTRETA VITTATA FAB., MALE

clover, in the developing seeds of which it lays its eggs. The larva is a footless grub about 1/12 to 1/16 inch long. When full grown it entirely fills the seed, of which it has eaten everything but the coat. There are at least two broods in this locality. The insect hibernates in the seed on the ground, or in stored seed. Where clover is grown for seed the presence or absence of this insect is a potent factor in determining the paucity or abundance of the seed harvest, and it is imperative that control measures should be employed. These consist in the early cutting of the first crop as soon as the heads come into bloom; the fumigation of new seed before planting, and the drilling of seed as deep as is compatible with proper agricultural practice in order that the emerging chalcids may be prevented from reaching the surface.

Another insect which may be men-

tioned here is the *Fringed Anthomyia* (*Phorbia fusciceps*). This insect, sometimes known as the seed corn maggot, the bean maggot or the deceptive wheat fly, has very diverse food habits, as it is known to feed on beans, on seed corn and on crucifers. It sometimes plays a beneficial role, as the larvæ have been found feeding on the eggs of locusts. In 1913, this insect was discovered feeding on the roots of turnips to which crop it did considerable injury. In appearance both the larvæ and the adults closely resemble the cabbage root

maggot. When the fringed *Anthomyia* occurs as a root maggot of cruciferous plants the same remedies may be employed as against the cabbage root maggot.

In addition to the lines of work indicated above, we aim to come into more direct contact with the farmer by giving him advice on the control of insect pests and also of weeds and fungous diseases. Any person requiring such services should address his request to the Professor of Biology. Specimens of the pest should be sent when practicable.

ONTARIO

CORN VARIETY TESTS

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THE Ontario Department of Agriculture, through the district representatives, is arranging to conduct a corn variety test in practically every county in Ontario. The objects of the experiment are:

1. To demonstrate the advantages of well matured and properly dried seed corn shipped on the cob, as shown by its high percentage of germination and vigour of growth compared with ordinary crib dried corn shipped in sacks after shelling.

2. To suggest the hill system as the most practical method for the production of ensilage, as demonstrated by its equally large tonnage per acre, at the same time permitting of thorough cultivation both ways of the field, thus affording an excellent crop with which to eradicate weeds.

The following seven standard varieties of corn, recommended by the Ontario Corn Growers' Association, have been selected and first-class seed in each instance secured:

DENTS—White Cap Yellow Dent, Bailey, Wisconsin No. 7, Golden Glow.

FLINTS—Longfellow, Salzer's North Dakota, Compton's Early.

Eight reliable farmers in each

county have been selected, with a view to covering the county as evenly as possible, with instructions to devote one acre of land to the seven varieties. Definite instructions will be given to each experimenter as to methods of planting and cultivation. During the summer months each of these fields will be carefully inspected and comparisons made between the varieties as to stand of plants, size of leaf, size and number of ears, date of maturity, yield, etc. It is intended that this experiment shall be conducted for at least three successive years, so that climatic conditions may be less likely to interfere with the results secured in the province. In Ontario, where corn for silage is becoming so largely grown, it is found that an experiment of this kind demonstrating the advantages of certain varieties for certain districts will do much to increase the yield, and improve the quality of silage, and form a basis to get the farmers in the corn-growing counties of the province to undertake the task of growing standard varieties that are suited and that will meet the requirements of the market.

NOTES FROM DISTRICT REPRESENTATIVES

EXTRACT from report dated February 27th from I. B. Whale, District Representative for Middlesex county at London:

"The Junior Farmers' Improvement Association asked that a representative of the class be put on the agricultural fair board at Strathroy. Their request was granted and they were also promised the stock judging competition at the fall fair, prizes to be paid by the fair board. They decided to arrange a special educational exhibit to be put on at the fair, showing as far as possible, the results of experiments which they intend carrying on, namely, the planting of one, two and three eyes to a set in potatoes, different methods of cultivation, treatment for scab, spraying for blight, the results of seed selection. Three of the boys are feeding hogs twice a day and three times a day. They are dividing the pen, weighing the feed, in order to get actual figures. Several are making a special effort in the selection of their oats for seed, others trying fertilizers, and different methods of cultivation. It was impressed upon those present that it was figures that they wanted at their annual meeting in December, not merely a statement that they had better results."

Extract from report dated May 1st from H. A. Dorrance, District Representative for Dufferin county at Orangeville:

"We have a very large inquiry concerning smut in oats. Previous to this, I had an article dealing with smut in the various papers in the county, and we have a large number

inquiring as to the various methods of treating smut, and druggists inform me that they have had a larger sale for formalin this year than for many years. Many farmers who have never tried the treatment are preparing to treat their grain this year."

Extract from letter of P. Stewart, B.S.A., District Representative for Kenora district, Emo, Ontario:

"That the young farmers of Kenora district are a live lot there is little doubt. No less than nine young men have started out each to grow one acre of potatoes for the special Ontario Government prize.

"It is probable that eight out of the nine acres entered will compete also for the Dryden Agricultural Society's standing field crop prizes. This will make the competition keener and give more competitors a chance to win a prize.

"If eight competitors finish in the contest and fill in the blank forms giving an accurate account of the cost and yield, the first and second prize winners will be given the opportunity of attending the two-weeks short course at the Ontario Agricultural College in January.

"Five of the boys are growing the same variety viz.; Delaware, which goes to prove the popularity of this famous medium-early high quality potato.

"The names of competitors are as follows:—

"L. Euler, Waldhof; D. F. McKenzie, Eagle River; Jas. Shapland, Eagle River; W. H. Lucas, Eagle River; Henry Davis, Oxdrift; Harold Latimer, Oxdrift; Charlie Skene, Oxdrift; Everett R. Martin, Dryden; Ed. Alcock, Box No. 167, Kenora."

SPRING REPORT ON BEE-KEEPING

BY MORLEY PETTIT, PROVINCIAL APIARIST

DURING the latter part of April report forms were sent by the Department of Agriculture to a large number of beekeepers in Ontario. These were filled out and returned and the following summary of the winter loss, condition of the bees and honey crop prospects for 1915 taken from them.

Nine hundred and ninety-three beekeepers reported 37,317 colonies in the fall, and 31,310 colonies in the spring, showing a winter loss of 6,007 colonies or 16.1 per cent. This was largely due to the unfavourable breeding season of 1914, causing many colonies to go into winter quarters with large numbers of old bees; also to the poor quality of the stores, causing granulation, which gives unfavourable results, as in districts where much sugar syrup was fed in the fall the losses are comparatively small.

This is the heaviest winter loss reported for some years, and, if we were to judge by last year's crop failure following the lightest winter loss reported for years, we would expect a bumper crop.

In considering these reports it must be remembered that only one in seven who received the blanks sent reports, also that the inclination is not to report failures, but only successes. One hundred additional blanks came back with the statement that the sender was "not a beekeeper" in many cases having lost all of his small apiary without giving numbers which could be used in making an estimate. It has also been learned that some extensive beekeepers have lost heavily without reporting in the regular way. It

seems that either the wintering problem has not been entirely solved, even by the specialist, or else he is not always putting all his knowledge into practice.

The colonies that survived had an early cleansing flight, and brood rearing started during the warm spell in April. The first reports received indicated that the bees were in a weak condition, but reports that arrived later show the bees to be building up rapidly and in fairly good condition.

The honey crop prospects vary considerably in the different districts. In the southern counties, the clover is reported in good condition and the prospects extremely bright. The crop outlook about the Georgian Bay is only fair. Farther east—Ontario and Victoria counties—both condition of bees and crop prospects are poor. In the extreme east the early reports were bright, but later ones show spring dwindling and a darkening prospect of the honey crop.

It is impossible to determine with any certainty the honey crop prospect at this date, as a late frost, or a prolonged dry spell, might cause serious loss, but generally speaking while the winter loss is discouraging, the rapidity of the building up of the colonies, the great quantity of pollen collected, and the generally promising appearance of the clover crop, would indicate a favourable season for the beekeepers who have wintered their bees.

Judging by the heavy winter loss, however, and the crop failure of 1914, there does not seem to be much danger of an over-production of honey this year.

REORGANIZATION OF FARMERS' INSTITUTES

The Department of Agriculture of Ontario has adopted a scheme for the thorough re-organization of farmers' institutes, at once enlarging their scope and giving more weight and practical effect to their proceedings. Superintendent Putnam, who has had the matter in hand, has outlined his plans as follows:

Under the new organization each association shall be known as "(name of riding) Board of Agriculture," and by a distinctive name, e.g., "East York Board of Agriculture."

OBJECTS

The object of each Board of Agriculture shall be the dissemination of agricultural knowledge in its district, the development of local talent, to encourage the formation of Farmers' Clubs, to secure the co-operation of all agricultural organizations and representatives of the municipalities concerned, in planning for and holding meetings at which demonstrations, lectures and discussions shall be featured, to stimulate a more general co-operation among the Farmers' Clubs and Women's Institutes, and to hold a general rally of the farmers of the district at least once a year. The officers shall endeavour to bring the rank and file of the farmers into touch with the most successful local men, that the masses may become more conversant with the best and most profitable methods of farming, stock raising, dairying, fruit culture, and all other activities connected with the industry of agriculture.

ORGANIZATION

The districts in which Boards of Agriculture may be formed will be practically the same as the present institute districts, except in some sections of Northern Ontario and several counties in Old Ontario. A

Board may be formed in each district of the Province, exclusive of cities, or in such other divisions as the Lieutenant-Governor-in-Council may authorize. As soon as organization is completed, the Superintendent shall be notified, and the names and addresses of the officers and directors shall be forwarded to him.

REVENUE

All memberships shall terminate the 31st of December of each year. The membership fee shall be 25 cents, and the members will be entitled to literature published by the Provincial Department of Agriculture for general distribution.

Each Board shall have the power to fix the amount to be paid by the Farmers' Clubs on account of membership in the Board of Agriculture. This sum shall not, however, be less than 15 cents on account of each member of the Club who wishes his name forwarded to the Department.

The revenue of the Board shall be derived from membership fees, grants from the county or municipal councils, legislative grants, the holding of excursions, contributions, etc.

The Department of Agriculture will make grants as follows: \$25.00 to each Board, which receives a similar amount from municipal or county councils, and an additional sum, equal to one-half of the amount received in municipal or county grants above \$25.00. No Board shall receive more than \$50.00 as a legislative grant on account of any one year.

EXPENDITURE

All money received, whether as members' fees, legislative grant, grant from the county councils or from municipalities, or otherwise, shall be spent within the district in which the Board operates: (1) To

defray actual expenses of meetings; (2) To employ suitable persons to address said meetings; (3) To assist in circulating agricultural, horticultural, live stock, and dairy literature or periodicals among the members, or to establish a circulating library for the use of members; (4) To remunerate the secretary for services rendered.

SHORT COURSES AND MEETINGS

A speaker or speakers will be sent to meetings upon condition that the Board will provide a suitable hall in which to meet, and will advertise the

meetings in accordance with plans outlined by the Department. Short Courses will be held under the direction of the District Representative, who will co-operate with the officers of the Board and the directors in the immediate locality. In districts where a representative of the department is not stationed, the department will arrange direct with the executive committee of the Board for the holding of short courses. All requests for meetings in the districts for which speakers are desired from the department must come from the executive committee of the Board of Agriculture for the district.

MANITOBA

HON. VALENTINE WINKLER, MINISTER OF AGRICULTURE

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

HON. VALENTINE WINKLER has succeeded Hon. George Lawrence as Minister of Agriculture and Immigration for the province of Manitoba, the latter having resigned with the other members of the Roblin government on May 12th. In Mr. Winkler, Premier Norris has chosen a man of vigour, one who is well posted in public affairs and of sound practical judgment.

Although in no way posing as a political orator, the new Minister of Agriculture is the oldest sitting member in the Manitoba Legislature on the Liberal side and has been at all times a close student of legislation. In fact, so faithfully does he attend to the business in hand that he rarely leaves his seat in the house, preferring to follow everything said and done during the sittings. His long experience and extensive information enable him to throw light upon any matter that he may see fit to discuss and earn him the respectful attention of members on both sides.

He was first elected to the Legislature for the old constituency of Rhineland in 1892, and has repre-



HON. VALENTINE WINKLER
Minister of Agriculture and Immigration

sented the district practically ever since. In the redistribution which was carried out recently by the Roblin government the constituency of Rhineland was merged with that

of Morden and called Morden and Rhineland. Unanimously chosen as candidate in 1914, Mr. Winkler was returned with an excellent majority in the face of strong Conservative opposition.

Hon. Valentine Winkler was born in 1864, Grey county, Ontario, and received a first-class public school education before going to Manitoba

in 1879. For many years he has engaged in farming and business pursuits with marked success.

He takes up his new duties with a wide knowledge of requirements, with an unsullied reputation behind him, with a determination in all sincerity to serve the farmers of his province faithfully and well.

GOVERNMENTAL HANDLING OF WOOL

THE Department of Agriculture of Manitoba has issued a circular giving rules for the handling of wool by the department. In his introduction to the circular, which is No. 24, Hon. George Lawrence, then Minister of Agriculture, states that the idea is that the growers shall ship their wool clip to the department at Winnipeg to be warehoused and graded and to be sold in car-lots to the best possible advantage. The graders will not only grade the wool into commercial grades, but they will keep a record of quantity and quality of each clip, so that the farmer who forwards his clip in the best condition will receive a proportionate increase in price over the man who sends in a poorer clip.

The rules set forth that:

(1) Shearing should be done on a smooth floor, never in the dirt, and the fleeces should be kept as compact as possible.

(2) Before rolling fleeces they should be lightly shaken to remove all loose dirt and double-cut fibres. All heavy tags or badly discoloured locks should be removed. The fleece then should be spread on the floor or table with the bright or skin side down. The outside edges are then folded over to the center line of the back and the one-half of fleece again folded over to the other. Now, commencing at the tail, roll the fleece as compactly as possible to the neck.

In the coarser grades of fleeces the neck wool may be twisted and drawn into a band which is wrapped around the fleece and tucked in securely to hold the bundle together. With the finest shorter grades this cannot be done, and it is necessary to tie with twine.

Never use binder or sisal twine for this purpose, as the fibres become detached and adhere to the wool, greatly reducing its value. If possible use the regular paper twine, which may be obtained from any hardware store. If this is not available use any strong, hard, smooth finished twine, wrapping at least once each way, and tying securely in a square knot. When properly rolled and tied the bright or outside of fleece will be on outside of bundle.

(3) The wool may be packed in very clean woven jute, hemp or paper-lined sacks which will be supplied at cost. Shipping small quantities ordinary jute sacks may be used. They should be clean and turned inside out to avoid getting the loose fibres along the seams mixed with the wool. When full, the sacks should be sewn with smooth hard twine.

Addressed shipping tags will be forwarded each consignee, to be filled in, giving actual weights in each lot.

(4) The wool should be absolutely dry at shearing, and should never subsequently be permitted to become wet. Damp wool in storage will ultimately assume a yellow colour, which will prohibit its use in the manufacturing of white yarn. Besides mildew may attack it, which will impair the tensile strength of the fibre. Manufacturers greatly dislike wet wool and prefer not to purchase except at a considerable reduction.

(5) The wool should be shipped between June 15th and July 1st.

Freight to Winnipeg must be prepaid and the blank certificate of entry that accompanies the circular must be returned to the Department not later than 24th May, 1915. It might be mentioned that the Department has circularized every municipality for the names and addresses of all sheep men.

NOTES

Wheat seeding on the Manitoba Demonstration Farms was finished the last week in April, and the sowing of oats was completed the first week in May. The seeding of corn commenced May 15th.

Operations have started on the Fruit Demonstration Farm at Killarney, Manitoba, with the planting of a number of apple, crab and other

fruit trees and bushes. This planting will be added to from time to time.

As far as Manitoba is concerned the grain is everywhere reported to be looking well, and is unusually early. The Manitoba Department of Agriculture estimates that there will be an increase over last year in the acreage sown to wheat of about fifteen per cent.

SASKATCHEWAN

DEPARTMENTAL REPORTS

A report prepared in the middle of April by the Saskatchewan Department of Agriculture estimated the increase of acreage under grain crops this year at three quarters of a million, principally in the southern and central districts. Telegraphic advices indicated that the wheat-seeding was all finished by May 1st, a week or ten days earlier than last year. The wheat was well above ground in many southern districts by April 26th. Oats were pretty generally sown by the first week in May. While there was considerable moisture in some parts, rain was rather widely needed.

Co-operative wool-marketing was so pronounced a success last year that the system is being largely developed in accordance with extended demand. Sheep owners are again reminded that in order to receive increased prices, and it is anticipated that the gain of 6 to 8 cents last year will be improved upon this year, sheep-owners must take the greatest care in preparing and shipping their fleeces. In this connection it may be stated that the number of co-operative associations continues to increase, there being now

165 in the province, of which 16 were recorded in the last number of the provincial GAZETTE.

The foot and mouth disease bulletin, previously noticed, is receiving wide circulation and the number of inquiries received would seem to justify expectation that much good will result by increased watchfulness.

The order-in-council recently passed regarding terms of sale of pure-bred bulls to farmers by the Department of Agriculture under the Live Stock Purchase and Sale Act has been amended so as to allow for a payment of one-quarter in cash instead of one-half as formerly.

The movement initiated by the Department providing for the free testing of seed has proven exceedingly popular. In the first four months of the year 3,336 samples were analyzed, 2,878 or 86 per cent being of oats, and the others of wheat, barley and flax. Wheat germinated well, but barley was low, averaging about 65 per cent. Of the 2,878 samples of oats, 47 per cent germinated over 90 per cent, the samples running all the way down to $2\frac{1}{2}$ per cent below 40; 83 per cent germinating over 70 per

cent. Wild oats were found in 404 samples and 129 were infected with smut, while over 50 per cent had wild buckwheat. The low germination generally was due to frost. All the germinating work was done between sheets of blotting paper, cut six inches wide and twelve inches long, folded in half and docketed with the

sender's number and the dates. One hundred kernels of the sample were placed in each paper, which were placed in the standard germinator and moistened every morning and evening with the temperature of the room kept as evenly as possible at 68 degrees Fahr.

AGRICULTURAL INSTRUCTION COMMITTEE

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE

THE Agricultural Instruction Committee which was recently appointed by Hon. Walter Scott, Minister of Education, held its second meeting on April 17. This committee is composed of D. P. McColl, Superintendent of Education, chairman; A. H. Ball, Deputy Minister of Education; W. J. Rutherford, Dean of the College of Agriculture; A. F. Mantle, Deputy Minister of Agriculture; S. E. Greenway, Director of extension work of the College of Agriculture; A. R. Greig, Professor of Agricultural Engineering in the University of Saskatchewan; J. A. Snell, Principal of the Normal School, Saskatoon; and Dr. E. A. Wilson, Principal of the Normal School, Regina.

At this meeting a number of matters of importance in connection with agricultural instruction in the schools of the province were considered, and a forward policy decided upon. Particular attention will in future be paid to the subject of agricultural instruction in the schools and two directors of this work were appointed in the persons of F. W. Bates and A. W. Cocks. Professor Bates has for several years been

director of agriculture and physics in Regina College, and Mr. Cocks, who was formerly principal of Oxbow high school, is a graduate of an English agricultural college.

These gentlemen will be closely associated with the two provincial normal schools, Professor Bates being assigned to the northern half of the province and Mr. Cocks to the southern half. They will follow up the work of the teachers in their respective districts both in public and high schools. They will also be ex-officio members of the above-named Agricultural Instruction Committee.

Short courses in agriculture for teachers in elementary schools will be held at the University of Saskatchewan, Saskatoon, from July 6 to July 23.

A corresponding course in household science will be held in the Provincial Normal School, Regina, during the same period.

It is probable that a short special course in science and agriculture for inspectors and teachers of science will be held at the University of Saskatchewan from July 19 to July 30.

War—grim, ruthless, devastating, is shaking the civilized world; not only bringing death and ruin to millions, but dislocating the whole fabric of modern life, and so violently and in such strange ways disturbing the channels of national and international commerce and industry, that extraordinary readjustments have to be made, steps taken for which there is no precedent, and never was need so great for both steady heads and stout hearts.

—Hon. Martin Burrell.

ALBERTA

RECENT LEGISLATION

EXCEPTING a couple of amendments to the Statute Law of the province, entirely of a local character, and an act cited as "The Stock Inspection Act," there was no legislation affecting agriculture passed at the recent meeting of the Alberta legislature. The new act provides for the appointment of special inspectors and special deputy inspectors of stock and of slaughter houses or abattoirs. These inspectors are authorized to seize and sell any animals being unlawfully shipped or unlawfully held. The money received is to be forwarded to the Department of Agriculture. Shipment of stock that has not been inspected is prohibited. Registered stock are exempted from this provision. Inspectors are forbidden to issue certificates, for which, only five cents per head, with a minimum of twenty-five cents, is charged, unless the shipper produces a bill of sale, or the owner or agent verbally consents to the issue of the certificate. If the stock is not branded, a memorandum has to be furnished setting forth the age, sex and description of each animal. Transfers or sales cannot take place without the inspectors' certificate. Auctioneers are required to furnish the inspector with

a description of each animal to be sold. Duplicate certificates must be sent to the Department. In case of improper conduct the inspector can demand return of a certificate. For cattle disposed of by private sale a fee of ten cents per head is charged, with a minimum of twenty-five cents, that must be paid before the transfer takes place. Butchers and hide dealers are required under this act to take out a special license, for which the fee is one dollar, and are required to keep a record of all cattle slaughtered, with the names and addresses of the persons from whom obtained. Railway agents are forbidden to accept hides for shipment from any other than a licensed butcher or dealer. Every hide must also be inspected and a fee of 10 cents paid for each on account of such inspection. Inspectors must make an annual report in detail to the Department of Agriculture. Contravention of the Act in any particular means a fine of one hundred dollars. The act repeals the Stock Inspection Ordinance.

APPROPRIATIONS FOR THE YEAR 1915

Following are the appropriations made for agricultural purposes for the year ending 31st December, 1915:

Expenditure under Agriculture Society Ordinance, including Grants to Exhibition Association at Edmonton, Calgary, and Lethbridge, of \$5,000 each	\$100,000 00
To provide for expenses of Official Judges at Agricultural Exhibitions	7,000 00
To promote the work of Live Stock and Agricultural Institutes and Associations	20,000 00
To promote and encourage the production of Pure Seed Grain, and Provincial Seed Fair	4,500 00
Administration of Demonstration Farms	15,000 00
To provide for holding a Fat Stock Show	2,000 00
Purchase and equipment of Demonstration Farms	8,000.00
Destruction of Grey or Timber Wolves	4,000 00
Destruction of Noxious Weeds	25,000.00
Stock Inspection	5,000.00

To provide for Expenditure in connection with brands and publication of Official Brand Book.....	10,000.00
Collection and compilation of Vital Statistics.....	11,000.00
Collection and compilation of Medical, Agricultural, Industrial and other Statistics.....	4,000.00
To provide for expenses in connection with the Protection of Game.....	30,000.00
To provide for Bacteriological and Pathological Works in connection with Laboratory.....	9,000.00
To promote and encourage Dairy Work.....	12,500.00
Operation of Demonstration Farms.....	50,000.00
Operation of Schools of Agriculture.....	20,000.00
Grant to Cattle Breeders' Association.....	1,500.00
Grant to Horse Breeders' Association.....	1,500.00
Grant to Sheep Breeders' Association.....	400.00
Grant to Swine Breeders' Association.....	200.00
Grant to Poultry Breeders' Association.....	200.00
Grant to Alberta Fairs' Association.....	1,000.00
To assist Creameries, not exceeding \$1,500 to each creamery.....	4,500.00
To provide for advance payments and general operating expenses of Creamery Work.....	150,000.00
Expenditure under Prairie Fires Ordinance.....	4,000.00
Grant to United Farmers' Association.....	1,000.00
Expenditures for Immigration, Colonization and Advertising.....	20,000.00
Contingencies.....	1,000.00
To promote and encourage the Poultry Industry.....	8,000.00
Grant to Alberta Natural History Society.....	100.00
To procure mounted heads of animals, birds, etc., for Decorative and Museum Purposes.....	1,000.00
To provide for scholarships for students attending Agricultural Colleges.....	1,500.00
Grant to Alberta Fish and Game Protection Association.....	100.00
Grant to Spring Stock Show, Edmonton.....	5,000.00
Women's Institutes and Grants to same.....	2,000.00
Grant to Western Canada Irrigation Association.....	500.00
To provide for advances under Elevator Act.....	200,000.00
	<hr/>
	\$740,500.00

Of the foregoing amount \$212,500, namely the appropriations for purchase and equipment of Demonstration Farms, \$8,000, for creamery assistance, \$4,500, and for advances under the Elevator Act, \$200,000, are chargeable to capital, and the remaining \$528,000 to income.

ESTIMATED REVENUE

The estimated revenue of the Department of Agriculture, \$289,000 is as follows:

Fees: Game licenses, sale of estray animals and other fees.....	\$ 64,500.00
Reimbursement of advances on Butter and Poultry.....	150,000.00
Repayment, account of Seed Grain.....	7,000.00
Repayment, loans to Creameries.....	2,500.00
Demonstration Farms.....	60,000.00
Poultry Breeding Plant.....	3,000.00
Registration of Threshing Machines.....	2,000.00
	<hr/>
	\$289,000.00

OFFICIAL APPOINTMENTS AND CHANGES

HORACE A. Craig, B.S.A., Alberta, having been superintendent of fairs from 1906 to 1911, and since Guelph, succeeds George that time superintendent of Harcourt as deputy minister of agriculture. Mr. Craig is well known and very popular throughout demonstration farms of the government in Alberta. He has been a

conspicuous success in both positions. He was one of the team from Guelph college when that institution captured the famous student's judging trophy at the International Live Stock show at Chicago, his



H. A. CRAIG, B.S.A.
Deputy Minister of Agriculture

individual score in the various classes being very high. He has always taken a keen interest in live stock. The splendid horses on the demonstration farms and the success of the steer-feeding competition bear eloquent testimony to that fact.

THE dean of the faculty of agriculture in the university of Alberta is Ernest Albert Howes, B.S.A., Guelph. Mr. Howes' name is well known in educational circles both in Canada and the United States. He was born in the year 1872 on a farm near Vankleek Hill, in Prescott county, Ontario. He was educated at the public and high schools of Ontario,

and is a graduate of the Ottawa Normal School. He spent eight years teaching public school. He was one of the teachers selected by Dr. James Robertson to take charge of school garden work in Ontario, and he started the first school garden in that province at Bowesville, near Ottawa. He took agricultural short courses at Cornell, Columbia and Clark universities, as well as at the Ontario Agricultural College. He was appointed principal of the Macdonald Consolidated School at Guelph, which position he occupied for four years. This school specializes in household science, manual training and elementary agriculture. He then attended the Ontario Agricultural College, from which he graduated, securing the degree of B.S.A. He spent one year with the



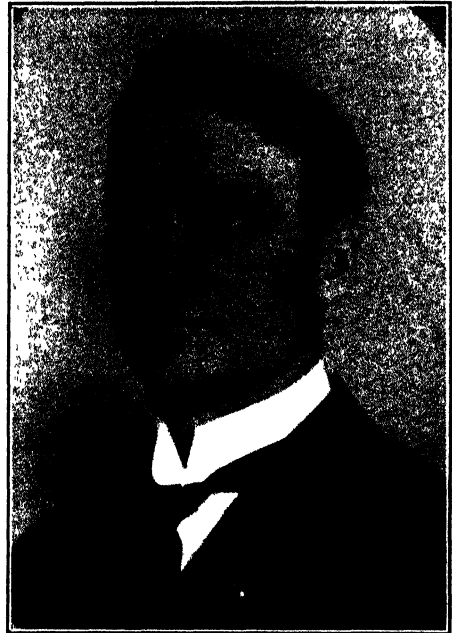
E. A. HOWES, B.S.A.
Dean of the Faculty of Agriculture, University of
Alberta, Edmonton

Dominion Seed Branch in the Department of Agriculture at Ottawa, in charge of the germination laboratory and the field plot tests, after

which he left for the state of Nevada. For one year he was agronomist at the irrigation station at Reno, and then was appointed professor of agronomy at the University of Nevada, which position he occupied until he resigned in the fall of 1913 to take the principalship of the Vermilion School of Agriculture, Alberta. The last named position he filled until his appointment on the first of May as dean of the faculty of agriculture in the University of Alberta.

SIDNEY G. Carlyle, appointed superintendent of demonstration farms for Alberta on May 1st, 1915, was born in Dundas County, Ontario. Mr. Carlyle lived on his father's farm until 1895, when he attended for one year at the Guelph Agricultural college, later finishing his course at the Wisconsin agricultural college. He afterwards farmed in Ontario, being a successful breeder of pure-bred Holstein cattle. During these years he did a great deal of institute work and judged at fairs for the provincial government in Ontario. He came to Alberta in the spring of 1913 as instructor in dairy farming

and had charge of the dairy herds on the provincial demonstration farms, as assistant to Mr. Craig, until his appointment on May 1st as superintendent of demonstration farms.



SIDNEY G. CARLYLE
Superintendent of Demonstration Farms

FIRST CROP OF GRADUATES FROM THE PROVINCIAL SCHOOLS OF AGRICULTURE

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

THE Alberta Provincial Schools of Agriculture at Claresholm, Olds and Vermilion completed their second teaching year on March 26th, on which date closing exercises were held at all three schools. As the course extends over two years, this year's work turned out the first crop of fully graduated students to the total number of eighty-nine boys and girls distributed as follows:

Claresholm	28 boys	8 girls
Olds	22 "	8 "
Vermilion	15 "	8 "
	65 boys	24 girls

At Claresholm the diplomas in both the Practical Agriculture and Household Science were presented by Dr. Shuttleworth of Blackie, and addresses were delivered by Mr. Marnock, President of the Board of Trade, Lethbridge; J. C. Miller, Director of Technical Education, Edmonton; H. A. Craig, Deputy Minister of Agriculture, Edmonton; C. S. Noble, Nobleford, a member of the Board of Agricultural Education, and Jas. Clements, of the Department of Agriculture, Edmonton. W. J. Stephen presided and five hundred

visitors from the town and district attended the exercises.

At Olds, the Hon. Duncan Marshall, Minister of Agriculture presented the diplomas, giving at the same time a forceful and enlightening address on the establishment, progress and aims of the schools which called out a lively response among the local enthusiasts for the institution. F. M. Black, representing Mr. P. Burns of Calgary, presented the two prizes, each of fifty dollars in gold, to the winning girls in cooking, sewing and buttermaking, and to the winner among the boys in the competition in stock-judging, grain judging, weed seed identification, blacksmithing, carpentry and buttermaking.

Addresses were delivered by Messrs. E. L. Richardson, Calgary, L. Hutchinson, Duhamel, both members of the Board of Agricultural Education, and by W. J. Elliott, Principal of the School.

Dr. Tory, President of the University, and also President of the Board of Agricultural Education, made the presentations at Vermilion. He took occasion to set out the significance and practical aspect of the educational services furnished by the Schools of Agriculture, and also the necessary articulation of these Schools with a type of training and science study properly belonging to the University. Mr. C. Marker, Dairy Commissioner for the Province, and Mr. S. G. Carlyle, Superintendent of Demonstration Farms, gave short practical addresses to the graduating students.

The enrolment at the different schools over the two seasons is as follows:—

Claresholm:—	1913-14	1914-15
Boys.....	71	75
Girls.....	35	33
Olds:—		
Boys.....	61	88
Girls.....	39	35
Vermilion:—		
Boys.....	34	43
Girls.....	28	10
Total.....	268	284

The total count of names on the registers of the schools is five hundred and fifty-two pupils, but, as a considerable number of those in the second year have come over from the previous year, it reduces the number of persons directly affected by the school services to between four hundred and fifty and five hundred pupils. This is not simply favourable, but phenomenal. The school is a wholly new type of school in a comparatively new country and has been established in the interests of the farmers, who, as a class, are not usually over hasty in taking on new things without question. It may be safely concluded that the schools are fitting aptly to a direct need, or they would not enjoy the patronage that they do. One of the schools is in a district in which initial settlement is only half a dozen years old.

The preponderance of boys in the classes shows how aptly the schools fit the needs of the farm boys. The town high schools do not meet the case of the country boy who wishes to follow country work. It rather weans him away from the farm. The agricultural college does not take him up where it finds him. The agricultural school, however, does. It begins lower down, it touches his concerns immediately, and it likewise fills the gap between the common school and the university schools of agriculture.

Most of the boys who have graduated this year are back on the farm, but a good many of them are entering the college of agriculture at the university this fall. The schools have succeeded because of their definite and specific aim in relation to country needs and likewise because their establishment on the Demonstration Farms has given the only right atmosphere in which an agricultural school can properly flourish. The results justify the effort of the Minister of Agriculture in their establishment and development as well as in their expansion, both as to the scope of the work and the number of schools provided.

NOTES FROM THE SCHOOLS OF AGRICULTURE

CLARESHOLM

ON the experimental area up to date, the following has been sown under first-class climatic and soil conditions:—

- April 6th.—Started seeding wheat;
- “ 13th.—Started seeding oats;
- “ 20th.—Started seeding peas;
- “ 20th.—Started seeding sugar beets and mangels;
- “ 22nd.—Planted early vegetables, such as parsnips, carrots and onions.
- “ 24th.—Started seeding barley.

The Dairy Competition is in progress.

One of our teachers is in charge of the work against the army cut worm in the Raymond district for the Provincial Government.

OLDS

BY W. J. ELLIOTT, PRINCIPAL

IT is a very significant fact that applications are coming in already for next winter's term. Some 40 to 50 of last year's freshman class have sent in their applications for next winter, and in addition to this we have some six or eight applications from boys, who are preparing to take the freshman class, beginning next fall. It is a surprising thing to see the applications beginning to come in as early as they are this year.

The Animal Husbandry branch of the school is planning to continue the dairy test work with the farmers of the district. Last year the farmers were allowed to enter any or all of the cows in their herd, and only the highest producing cow counted in the contest. During the coming summer the test will be modified to the extent that farmers will be required to put in as a minimum, a group of five cows. If they are

milking more than ten cows, it will be necessary for them to put in half of their herd. In this way we hope to get a very much better idea of the productive capacity of the cows in the district, and also hope to get information that will be much more useful to the farmers. Already some 15 farmers have signified their intention of entering cows in the contest, and before the end of May, when entries for the contest will close, we anticipate that we will have all that the staff can possibly care for. Members of the staff have to visit each herd once per month to take samples of the milk and also to see the milk weighed. Splendid live stock prizes are given by the Hon. the Minister of Agriculture in this connection.

In the experiment field, the agronomist is taking up quite largely the matter of variety testing so that we may select small varieties of grains and grasses that seem to be best adapted to the locality, and then will be able to work more definitely with those. There are almost 100 plots seeded at the present time, and weather conditions point to very good results. The alfalfa which was planted last year has come through the winter apparently in first class shape. Both the broadcasted seed and that sown in rows promise very well.

In the agricultural mechanics branch, the instructor will spend the summer assisting farmers in the erection of buildings, in the proper grading up of roads, and with such gasoline engine troubles as they may develop.

The extension work of the School of Agriculture is proving to be very much thought of by the farmers in the district.

PART III

Rural Science

CARE OF SCHOOL GARDENS DURING SUMMER VACATION

PRINCE EDWARD ISLAND

BY R. H. CAMPBELL, SUPERINTENDENT OF EDUCATION

IN Prince Edward Island we do not anticipate very much trouble this year in providing for the care of school gardens during the summer vacation. In our rural schools the summer vacation is comparatively short. These schools will close June 30th and re-open August 9th. Teachers who start school gardens will be held responsible for their care. If the teacher is not prepared to assume the responsibility of making such arrangements as will provide for the care of the garden during July and the first few days in August she is advised not to start a garden at all. It is felt that, if the school garden has been properly conducted, interest among pupils and parents will be sufficiently great to make such

arrangements easily possible. The teacher is paid a bonus for a well-kept school garden properly used in the instruction of the pupils, but the bonus is not payable till August, when the Inspector's final report on the condition of the garden is received. We have ten inspectors or one for every group of 48 schools. We expect this summer to have about one hundred school gardens in operation or about ten to each inspector. During the summer vacation each inspector will visit all the gardens in his inspectorate and will see that the arrangements for their care, previously made by the teacher, are being carried out, or should the need arise will make such other arrangements as to him may seem necessary.

QUEBEC

BY JEAN-CHARLES MAGNAN, OFFICIAL AGRICULTURIST

THE care and maintenance of the school gardens in the province of Quebec do not give much trouble, particularly in the educational institutions which are managed by brothers or nuns. When the school year is over, that is,

towards the end of June, the teacher who has supervision of the school garden, calls the pupils together and gives them the necessary instructions. The children must attend to the garden during the summer vacation at regular hours appointed by the

school authorities. For instance, once or twice during the week, they visit their garden, accompanied by a guardian. They bring their tools, or use the tools belonging to the schools, when the trustees are thoughtful enough to buy same for the pupils.

Then the scholars spend an hour or two in the school garden, hoeing, cultivating, watering, etc. Some of them transplant vegetables and shrubs, others prune tomato plants or fruit shrubs that have been given to their care by the teacher. All of them fight the insect pests and weeds. When their work is done, the children are called together by the teacher, and they make a record of their work and observations in an agricultural copy-book prepared for their special use, entitled, "Diary of My Garden."

In small schools, which are far away from the village, it is difficult to have the children meet once or twice a week, as some of them live a mile or two from the school. Very often, too, the teacher leaves the school to spend the vacation with her family. In this case the children harvest their products at the end of the school year. These products consist of early vegetables, such as radishes, carrots and lettuce. They are not very big, but they are the result of their work.

Furthermore, the lessons in horticulture that the teacher has had time to give will encourage the children to keep a small home garden. In the fall, the vegetables which the pupils have grown are brought into one of the school rooms, where a small agricultural school fair is arranged.

However, in some places the teachers spend the summer in the school, or in the neighbourhood of the school. Then, an excursion to the garden by the pupils can be easily arranged. But the teacher must appoint the hour and the day and she must accompany the pupils herself at each visit.

Lastly, although the teacher may have to leave the school for some reason during the vacation, she can arrange for the garden to be cared for, by organizing in June, with the help of the pupils and of the board of trustees, a club of children-gardeners.

One of the school trustees is requested by the teacher to act as patron of the club. He accompanies the children to the school once a week, at an hour appointed by an executive committee of the pupils and approved by him. This method is practical when the school is near an inhabited house, the occupants of which agree to watch over the garden and prevent strangers from trespassing. It is better, however, in the interest of pupils, to appoint a farmer as patron of the club.

Lastly, some teachers arrange for home gardens. Plants or seeds are distributed to the children by the parents. Instead of having a school garden, the pupil works a plot on his father's farm. All plots are visited twice or three times during the vacation by the teacher, or a school trustee. In this way, the children are stimulated and encouraged. Little by little also the attention of the parents is aroused to things relating to the school. This is also a very important point.

ONTARIO

BY PROF. S. B. MCCREADY, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

HARM DONE BY NEGLECTED GARDENS. — For Ontario school gardens at rural and

village schools, it is urged that their summer holiday care be one of the very first considerations. In plan-

ning for the garden, teachers and trustees are warned not to make a commencement unless they are certain that the garden will not be neglected. Teachers who expect to be leaving their school at the end of June are advised not to commence a garden unless they are sure that sentiment and organization in the community will carry it through successfully. Where a garden has been carried on in previous years, and cannot be expected to continue successfully, it is advised that the ground be put into good shape and seeded down. Neglected school gardens are a menace to the cause of agricultural education. They retard real progress. It is better not to commence a garden at all in most cases, than to demonstrate only a failure. One year's failure will ordinarily be more convincing of the uselessness of school gardening as an educational enterprise, than several years of successful gardening will be convincing of their usefulness.

PLAN A YEAR AHEAD.—Where a garden is to be undertaken for the first time the plans for its preparation and care should be made before autumn passes. The best security for good care will be to arouse community interest in the garden. The people must be made to understand what the garden stands for in *terms* of education of their children as well as in terms of community "getting-together". The garden must be made *their* garden; it should not be merely the teacher's garden in which they acquiesce for the sake of keeping peace. The people should as far as possible plan it themselves. They should be represented personally in the garden experiments and demonstrations. The trustees should have a "trustees' experiment". The local branch of the Women's Institute should be represented in some part of the flower growing that is to be done to beautify the school. Some of the ex-pupils should be enlisted for some of the work. In fact an ideal school garden will be for the

education in agriculture of the whole community, and, more than that, it should be a training ground for the development of the "co-operative spirit", in which lies the best hopes for our needed rural reconstruction.

WHAT ONE COUNTRY TEACHER DID.—This plan is well set forth in a letter received from a teacher last November. She was not specially framed for the work. Any teacher with the missionary spirit could do the same. But she saw the needs of the situation and recognized that country people must be personally interested; and that they must have the school's project explained to them. It will be a strange thing if these people do not re-discover, or possibly discover for the first time, the possibilities of their own school to yield them a rich educational service specially adapted to their needs as farmers. Here was their "getting-together" for school improvement and for an advanced step in rural education. It is to be hoped that this teacher may remain long enough with them to establish them firmly in their progress, or, failing this, that her successor may continue her good work. There is nothing so much needed to-day for the country as unselfish and continuous leadership from rural-minded country teachers. This is the letter; I have given it a title that points out the need: —

THE NEW LEADERSHIP

"It just occurred to me that you would be interested in the result of my attempt to start a school garden out here.

"I called a meeting of my trustees at the beginning of October, and explained to them what 'Agricultural Education' would mean to their children. They that evening decided to hold a School Bee on October 20th. Meanwhile I visited all the ratepayers, explained our object, and got the promise of a load of good earth, one of barnyard fertilizer, or of maple trees, from each one. None refused.

"October 20th was a rather dreary day, but the men came with their loads. They cleaned up the school ground, planted maple trees, dug up flower beds and borders, and ploughed a good large plot for a school garden, after enriching garden and beds

with good earth and fertilizer. They also removed a great many loads of stone from garden and grounds. They certainly were a busy and cheerful crowd. Now all is in readiness outdoors for our spring work.

"This is a section which has had the name of being thoroughly opposed to anything along agricultural lines in schools. I doubt if they ever before understood what was meant. Our Inspector seems delighted with results."

Eastern Ontario, November, 1914.

USE THE ANNUAL SCHOOL MEETING.—When the garden has been established already perhaps the best way to enlist and direct community interest is to use the annual school meeting for setting forth and discussing plans for the following season. The teacher should, if possible, attend the meeting, and previous to it, should stir up an interest in the proposed discussion by enlisting her School Progress Club as propagandists. If she cannot attend, she should make her plans and desires known to some of the trustees or some of the more progressive people. Nothing should be left to chance. From some of the mothers, support should be sought, even to their attending the meeting to show which way their hearts turned for the sake of their children's education. Per-

haps the annual meeting could be made a sociable affair, held in the afternoon or evening with a lunch served. So much the better for next summer's gardening and all the school work.

A COMMUNITY'S SCHOOL GARDENING.—With the foundation thus securely laid in the general unselfish, active interest of the people of the community, plans for the summer care of the garden can give little anxiety. It is only a matter of good organizing. Everybody will be helping. The trustees will do their share. The mothers' committee will do their share. The ex-pupils will be strong supporters and protectors. The School Progress club will oversee the pupils' work. The school will be alive, and a thing of beauty all summer, even if the teacher cannot be on hand to join in the many good times her people have had at their school. When she comes back, she will find that her community still holds together round the school garden. A simple little school fair in September will be the fitting climax to the community-building and agricultural-education enterprise.

MANITOBA

BY H. W. WATSON, M.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

THE proper care of the school garden during the summer vacation is a real problem and one that gives many teachers considerable worry. Some teachers report that during the holidays the weeds were allowed to grow to such an extent that the trustees took the mower and cut down everything that came in the way. It was easier to drive the mower than to use the hoe for an hour or two. Other teachers report that the gates were opened—or the fence broken down—and stock was deliberately driven in to eat down anything and everything that came in its way.

Several teachers report that vegetables and even grains were stolen from the school plots, previous to being harvested, by grown-ups not connected with the school. Such conditions are certainly very discouraging to an energetic teacher and interested pupils. However, if the garden be properly prepared, planted, weeded, thinned and cultivated until vacation begins, it will have taught many valuable lessons; and the conscientious teacher should not be discouraged even if the work ends there.

Still, gardening is a whole summer's work and should be made of educa-

tional value until the various crops are harvested, reckoned up, disposed of, the profits calculated and reports made thereon. To accomplish its best results the school garden should be kept in proper condition during the vacation until harvest time, and hundreds of school gardens throughout Manitoba were kept in such condition during the year.

ESSENTIALS TO SUCCESS

"Where there is a will, there is a way." The wise and thoughtful teacher who has a desire to preserve the good appearance of a school garden will surely find a "way."

Some teachers, it is hoped they are few, intend leaving the school, or hope to be able to leave, at vacation, and thus take very little interest in the garden and create less interest in the minds of the children. However, the faithful teacher richly deserves her vacation and should be freed from any worry regarding the dangers that may befall the garden plots during her absence.

The garden should be considered by children and parents an important part of the educational plant—the outside laboratory. The plots are the property of the children, who should be taught to assume the responsibility for their care and preservation.

The degree of interest created in the children by the teacher will determine the amount of care given the plots during vacation. Agriculture and horticulture should be taught systematically throughout the entire year, but special discussions regarding the school garden should be held during March and April. By the first of May everything should be in readiness for the children to put into execution the plans of the preceding months. After the somewhat tiresome work of preparing the soil, and carefully planting the seed, the real interest should begin as the various plants in turn begin to make their appearance. Very soon each morn-

ing's observations will create a fresh interest in the garden; at every turn the young gardener will experience a new thrill of inspiration.

The teacher should take care that all work is carefully and neatly done. The pupils should realize that they have done something worth while, have done it well and are worthy of success. All should feel satisfied with the results of their labours and be proud of their successes.

All work should be done in due season, so that at vacation time the plants will be well advanced, entirely free from weeds, thinned out when necessary and properly cultivated. An interest may thus be created that, if only directed wisely, will remain in the minds of most pupils, who will solve the "weed problem" during vacation.

METHODS EMPLOYED TO SOLVE THE PROBLEM

Many children regularly visit their plots during the vacation and keep them in condition. Some are driven by their parents, who also become interested, and at their regular visits to the village store, or post office, make trips to the school plots as well.

Trustees of many schools meet on Saturday afternoons and round up the village children to accompany them to the school grounds and perform the necessary weeding, etc. The children's plots (of many of these schools), furnish sufficient flowers for the Sunday services throughout the summer.

A janitor of a village school, who is generally hired by the year and employs his time during vacation in cleaning and repairing the school, should be interested in the grounds as well and act as a leader of the children. In some schools, committees are appointed for each week of the vacation and each committee, in turn, is held responsible. This plan works well in town schools where many children go camping for part of the time.

A municipal system of government may be profitably organized in connection with the school plot, with a reeve, alderman, road-inspector, weed-inspector, etc.

INCENTIVES TO SUSTAIN INTEREST

Competitions and exhibitions, both in rural localities and in towns, have worked wonders in creating interest in improved agriculture and horticulture. They should be of equal, or greater, stimulus to children; in fact a little money will extend much farther, and produce more marked results, when spent on children than on their parents.

Such competitions in school and home garden work have solved the

"weed problem" in hundreds of districts. The plots are judged at the end of June, again at the end of August, and in addition to the marks obtained at these judgments, competitors must exhibit at the school fair the best that the plots produce.

Many teachers hold an individual school fair early in September; the winners at these compete in a municipal or community fair, and the winners at the latter can enter competitions for the entire inspectorate.

The school fair, including area from the single district to the inspectorate, is proving the best incentive to good results, not only in school gardening and agricultural work but in all lines of school effort.

BRITISH COLUMBIA

BY J. W. GIBSON, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

THERE are those who regard the care and management of the school garden during the summer holidays so difficult as to make school gardening a rather doubtful undertaking. It will usually be found that such people take a similar view of any new movement which presents difficulties. They are not lazy people either, but merely given to "fearfulness" and needless apprehension. Anyone who has had experience in the organization and management of school gardens knows that the vacation problem does offer difficulties, and also knows that there are numerous ways of solving those difficulties.

Probably no two teachers will solve these difficulties in exactly the same way, but almost any method adopted will have some bearing on the question of the child's responsibility for the care of the garden during the summer holiday season. Some have advocated the placing of all responsibility upon the pupils, whilst others have gone to the other extreme and have relieved the pupils

of all responsibility. Neither is desirable and as is frequently the case the middle course will be found best in actual practice. We would all like to think that the pupils who take part in the work would maintain sufficient interest in it throughout the season not to permit their garden plots to become unsightly through lack of care and cultivation, but, unfortunately, many children are not able to give personal attention to their plots, and through no fault of their own. Some teachers have made absolute responsibility for summer care the chief condition on which the pupils might participate in school gardening. This usually ends in "breach of contract" for a large percentage of those taking part, and also places the work on a purely voluntary basis. Many of the most interested pupils, and certainly many of the most conscientious, are, by this means, debarred from taking part in school gardening, and it cannot be made the useful instrument in education that it should be, unless all the members of a class take part

in it. On the other hand, no person will say that the pupils who make no provision for the proper care of their gardens during the holidays are entitled to the same credit in this subject for the year as those who give their gardens attention weekly. Some system of merit marks may be used with good effect and these should be based upon the following points: (1) Conditions of the garden on the closing of school in June; (2) Number of hours devoted to the care of the gardens during the holidays; (3) Quality of the work done; (4) The garden diary or weekly garden report for July and August. This diary will contain a record of observations made in the garden from week to week as well as of the work done. Special credits may be given for drawings made from Nature to illustrate the garden report. To carry out this plan successfully, it will be necessary at the closing of school in June to make two definite appointments. (1) A garden day (or half day) to be observed by the pupils weekly during the months of July and August; (2) A garden manager or supervisor who will be in attendance at the garden on that day each week in succession. The school garden supervisor should be appointed by the School Board and should be a person who is not only entirely in sympathy with the work, but also conversant with the teacher's method of conducting it. For this reason the Board should consult with the teacher before making such appointment. The amount to be paid to such supervisor will depend upon the size of the garden and the number of pupils taking part in the work. It should not exceed \$3 per week and might be as low as \$1 per week. In a small garden, three hours weekly, preferably in the morning, will be quite sufficient to keep the garden in good condition. In large gardens eight hours per week might be found necessary. One hour per week is usually sufficient for each pupil to

spend in actual garden work. The writer has employed for this purpose both men and boys, and recommends a competent boy who has had experience in gardening. There is no reason why a young woman should not be appointed in some cases where the garden is not a large one. The supervisor registers the attendance of the pupils who come from week to week in gardening day and reports on the work done in each plot by number. He is put in charge of the school tools and is authorized to direct the pupils in the work which they are to do for the day. His consent must be obtained by pupils before removing flowers or vegetables from their plots during the summer. He will have charge of watering the garden when it is found necessary to do so and he will do the necessary work on the plots of absent pupils and record the same.

In order to create a spirit of emulation the Board may arrange to give small prizes to the owners of garden plots for good work done. These should be first, second and third and should be based upon an inspection at the end of July and another just before the opening of school at the end of August. If possible, in cities and municipalities where four or more school gardens are in operation, the School Board should arrange to present some sort of trophy or emblem of honour to the school winning the highest number of points for good arrangement and care of the garden during the summer holidays.

A part of each gardening day should be devoted to outdoor games and other social enjoyment. This is a most excellent opportunity for the Women's Institutes to do a really valuable service to the schools. They might arrange a school picnic in the afternoon of one of the gardening days, once in July and once again in August, preferably in the judging or inspection day.

THE COMMUNITY CENTRE MOVEMENT

BY A. KENNEDY, M.A., INSPECTOR OF SCHOOLS, WEYBURN, SASK.

ONE finds considerable satisfaction in the increasing evidence that the people are awakening to the recognition of the fact that the school is the centre of the community. With the recognition of this fact will come the beginning of the solution of the problem of the ruralizing, or socializing, of the Rural School. By reason of the conditions under which the settlement of the prairie has proceeded, the school is usually the only public building in the community, serving not only the needs of the children during the week, but also the needs of the people on the first day of the week, and often the social needs of the community in the evening. The period of "settling" has given place to the period of "settling down," and with this change has come the realization of wider possibilities in the school as the heart and centre of the community. Various agencies have been at work interpreting and encouraging different phases of the movement and the people are showing themselves anxious to keep pace.

The type of building now being erected is a vast improvement on the types hitherto prevailing; the little red school-house is fortunately passing. The modern rural school must not only conserve the health of its occupants, but must also provide physical and spiritual comfort so that the educational process may go forward most efficiently. It must meet the demand for such conditions as are necessary for the actual work of instruction and study, but also those indefinable æsthetic and psychological influences produced by a well designed and harmonious class-room which is attractive, cheerful and restful. Such a building has replaced the older type in South Weyburn School District 670,

the result of the desire of the district to provide the most satisfactory housing for their children; other districts are following the example.

The enlarging and improvement of the grounds have proceeded steadily in line with the campaigns conducted by the Departments of Education and of Agriculture in respect to tree-planting, School Gardens and Elementary Agriculture. Much more, however, remains yet to be done along this line.

The enlarging and enriching of the course of study in respect to Music, Art, Domestic Science and Manual Training is proving an important factor and progress has begun; much may be hoped for in the development thus made possible.

But the training, energy and personality of the teacher contribute the vitalizing factor. Communities with the real desire for progress seek the well-qualified teachers and make the conditions so inviting that a permanency is established.

Travelling libraries sent out by the government are already reaching sixty communities; this movement, backed by the propaganda of the Saskatchewan Library Association, provides a very necessary and helpful point of contact and co-operation. Grain Growers' Associations and Homemakers' Clubs provide still other points of contact.

The various agencies, however, have not yet crystallized an organization for the promotion of the Community Centre movement. In Wisconsin there is such an organization, and it has already accomplished much good.

"One bitter January day Miss — looked from her rostrum at twenty-six discontented, sulky pupils. The school house was a dingy old barn

of a place with only one room and no place even to hang wraps. The heating system was a stove in one corner, out of which proceeded some heat, but no comfort; the basement was a damp hole in the ground—in fact, it was a typical rural school. And, to make it still more accurately typical, across the wind-swept ice of Lake Mendota could be seen the vast assemblage of buildings of the greatest state university in America, on which Wisconsin had poured out millions, with a splendid enthusiasm for education.

"So much for the dome; so pitifully little for the basement.

"The stove smoked, and the children rubbed their eyes and looked so unhappy that Miss ——— made up her mind that she would do something. She did.

"The first thing was to get the people together; to remove the local feeling that the school was good enough.

"Now, that community is known as a rural district that found itself. Go to the school and you will find a remodelled school-house, and a glance over the class-room will show many things are going on at the same time. There is a buzz, but it is the sound of orderly industry. The clock strikes, and the classes pass to their seats. The girl leaves the type-writer and another takes her place. The sewing-machine changes hands. There is a piano in the room, and somewhere about is a work-bench equipped with tools which cost little but are worth everything to the boys. There is also a cooking-outfit including twenty articles with which the girls carry on their domestic-science work.

" 'We have socialized our school,' said one influential patron, 'We never knew what it was to have educational advantages in the district until we socialized it.' "

Examples like this might be cited and multiplied from every county in the state. They might be multi-

plied by thousands, if one could get the facts from the numerous rural schools of the new kind that are spreading as though by some sort of beneficent contagion all over the United States.

Dr. P. P. Claxton, Commissioner of Education for the United States, points out that the problems confronting the farmer of to-day are enormously complex by reason of the vastly greater complexity of the machinery with which he works—as compared with that which his father worked—the keener commercial competition into which he is forced, and the necessity for specialization. Book-keeping in banks, factories and shops is a very simple thing compared with farm book-keeping. There is more bacteriology in farming than in medicine; more chemistry than in pharmacy; more botany than any school course gives; more manual training than is given anywhere outside the technical schools—and all these things are woven into the web of life.

The new rural school is devoted to the matter of getting an education out of life. The development of the efficiency of our rural communities to the highest percentage will be a world phenomenon second only to a similar uplift in the teeming rural population of Russia. I should not favour it, if it had to be done at spiritual or intellectual sacrifice; but it will bring illimitable gains, both spiritual and intellectual. An immense ground-swell of culture will come with this rural renaissance because of the germinal power of truth and the happiness people get from the search for truth. Book learning runs out between the fingers of the ordinary man like sand; it is only to the unusual mind, to which literature is an end and not a means, that our present system of schools adequately ministers. Such minds are sometimes among the most precious gifts to the race, but they have had too much to say about how other minds should be trained.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

EXTENSION WORK IN THE UNITED STATES

IT was a Chinese philosopher who said: "The well-being of a people is like a tree; agriculture is its root, manufactures and commerce are its branches and its life; but if the root be injured, the leaves fall, the branches break away, and the tree dies." The importance of farming could not be more aptly designated. All the world over to-day this is being more and more recognized. The man with the hoe, or behind the plough, is equally as important, and far more necessary, than the man behind the gun. In peace as well as in war he is invaluable, and is, as he must be, always with us.

Within the last quarter of a century agriculture has made enormous strides in advancement. Previous to the establishment of specialized colleges, which are really a modern innovation, dating back in rare instances to more than half a century, tillers of the soil and breeders of cattle were left almost entirely to their own resources. The most encouragement that was given them was through fairs, exhibitions and local shows. Now all is changed, and state is vying with state, province with province, and country with country, in efforts not only to secure the best results in agriculture, but to bring the boys and girls up with a knowledge of, and love of, the pursuit to which their parents have devoted their lives. Nor is that all. Women are being given an equal opportunity to profit by research and scientific experiments in the branches of farm life and culture that they have specialized as their own. Household and economic science have taken close rank with agricultural progress.

To the advancement of the foregoing order of things governments are devoting energy, time, money and extra consideration. Every session of every legislature, state, provincial and national, sees acts and measures passed looking to the further development of agriculture. Canada, through the Agricultural Instruction Act,

and in other ways, is endeavouring to do her share and is annually devoting a sum that in recent years has grown from a few hundred thousand to as many millions of dollars. In accomplishing this she has invariably been either alongside or in advance of her neighbours. Especially is this true of the extension work that has been undertaken, and has rapidly developed in recent years—work in short that is intended to bring the college to the farm, not so much for the benefit of the grown-ups as for the advantage of the young, of the immature, whose education is thereby advanced and their hold upon the soil enhanced.

CARRYING THE COLLEGE TO THE FARM

In the United States, within the last dozen years, there has been a great awakening, more particularly in extension work. As far back as 1862 Congress took steps by grants of land and, later on, by subsidies, to encourage the establishment and maintenance of agricultural colleges, but no single action was ever taken of more significance, and, next to the establishment of the colleges themselves, of more importance, than the passing of what is known as the Smith-Lever bill providing for the inaugurating of co-operative agricultural extension work between what are known as land-grant colleges—colleges established in each state through the medium of the land grants made in 1862—and the Federal Department of Agriculture at Washington. By this bill there was provided a sum, which, starting at \$480,000, would be increased by \$300,000 for each of ten years, by which time the sum to be distributed in grants to the states for the work desired will amount to \$3,480,000. This graduating sum is allotted on the principle of population, with the proviso that, over and above a free grant of \$10,000, each state must devote to the same purposes, a like amount to that received from the

federal grant. The increases of allotment year by year are thus not only dependable in size on the growth of the aggregate central grant but also upon the willingness of the different states to devote an amount corresponding to that received. How this works out is proven by the experience that will be of Pennsylvania. In 1914 that state received \$10,000 and, in 1915, \$46,900. By the proportionate increase every year the grant will reach \$262,150, which, added to a like amount from the state, less \$10,000, means that \$514,300 will be available for extension work.

With the foregoing explanation of the recent impetus given in the United States to extension work—of carrying the college to the farm—a glance can be taken at the manner and character of the work that is in progress in the principal states, among the most progressive of which are the aforementioned Pennsylvania, and Massachusetts, Kansas, Iowa, Ohio, Illinois, Florida, and Minnesota. In many respects the work is of the same nature in each state, comprising winter and summer courses, short courses, rural schools, visits to farms, demonstration trains and correspondence courses. The last mentioned is particularly featured in Massachusetts, but the other methods are common to all.

LANTERN SLIDES AND MOVING PICTURES

It was in Denmark that the extension and co-operative principles in farming first made pronounced headway and it was upon the example of that country that the Massachusetts Agricultural College, situated at Amherst, founded its first experiments in similar work. Lecturers are supplied free with lantern slides and moving pictures, to any farmers' institute, club, or other organization that charges no admission to its demonstrations. For this purpose a list of thirty lecturers is maintained. The establishment of boys' clubs in different branches of breeding and cultivation is encouraged. How great has been the success of these organizations is proven by the fact that inaugurated in 1908 with half a dozen clubs and a few hundred members, in 1914, or in six years, the clubs had multiplied to such an extent that they numbered upwards of 70,000 members, all of whom were receiving elementary education in agricultural subjects, and to encourage whom the state Board of Agriculture grants \$1,000 for prizes.

The short courses held in Massachusetts include: 10 weeks' winter course, January 6th to March 13th; apple-packing school, January 21st to 28th; farmers' week, March 16th to 20th; tree wardens' school, March 24th to 27th; Polish farmers' day, March 26th; beekeepers' course and convention, date selected; summer school of

agriculture and country life, June 30th to July 28th; poultry conference, July 22nd to 24th; boys' agricultural camp, second week in July to second week in August, and conference of rural community leaders, July 28th to 31st. Of course these dates, not being of a fixed character, are only approximate. Courses are also held for fertilizer agents, feed agents and dealers, milk inspectors, seed dealers, and there is a special day for foreigners.

A CORRESPONDENCE SYSTEM

The most noteworthy activity of the agricultural college is in the comprehensiveness of its correspondence system. Inquiry is invited on agricultural education, literature and organization, Babcock testing, bacteriology, breeders' organizations, chemistry of foods, fertilizers, their composition and use, civic betterment, clearing land, community organization, co-operation, crops under glass, dairying records and improvement associations, diseases of live stock, drainage, drinking water, farm book-keeping, building, sanitation, crops, irrigation, machinery, management, managers, feeds and feeding, field crops, floriculture, forestry, fruit culture, gardeners and florists, greenhouse construction and management, greenhouse crops, grass, meadows, hay-making, identification of plants, insects and insecticides, landscape gardening, live stock, manures, market gardening, marketing farm products, milk problems, nursery work, orchard management, plant breeding, plant diseases, poultry, purity of seeds, rotation of crops, rural credit, economics, sanitation and social conditions, schools of agriculture, selection of farms, small fruits, soil composition, special crops, spraying, statistics of agriculture, stock breeding, storage of fruits and vegetables, tillage, trees, tree diseases and veterinary science. In carrying on the system advice is given on the text books required, which are supplied by the college if desired, as well as record blanks, account blanks, demonstration sheets and contracts, individual cow record blanks and herd summary sheets. Co-operation is invited with all societies and organizations, state and otherwise, having the promotion of agriculture or the improvement of house and home in view.

Not only are bulletins on special subjects and on every branch of agriculture and household science distributed free but a monthly leaflet is published entitled, "Facts for Farmers," containing timely information on fruit growing, dairying, animal husbandry, bee-keeping, soils and other agricultural subjects. Travelling libraries are maintained and the boys and girls are encouraged to play games, and, with the adults, to join in picnics.

The first step towards taking advantage of the correspondence system is to apply

for an enrolment card. This being filled out is returned to the supervisor of correspondence courses, together with the registration fee of one or two dollars for whatever courses it is desired to take up. Upon receipt of the card and fee, the applicant is enrolled as a correspondence course student in the records of the extension service. Correspondence work is discontinued between June 1st and October 1st. There is no restriction to age, race or nationality.

CONVENTIONS ARE ENCOURAGED

Pennsylvania's extension work is very much the same as that of Massachusetts. The winter course, however, consists of twelve weeks extending from the first week in December to the last in February. Farmers' week is from December 28th to January 2nd, during which 150 lectures on agricultural subjects, fruit-growing, floriculture, landscape gardening and home economics are delivered to an average registered attendance of from 900 to 1,000 people, representing nearly every one of the 67 counties in the state. The college encourages and inaugurates conventions of every kind, placing the entire 1,400 acres of which its grounds consist entirely at the service of visitors, who are induced to take advantage of the privilege by the running of special excursions. Cow-testing associations, breeding associations, farmers' institutes and clubs, co-operative and syndicate associations are worked with and developed by the free loan of instructors, lecturers and demonstrators. A farm bureau under the direction of an agent has been established in every county. Funds for these purposes are derived from the college, county, state and national governments and the railroad companies, the latter of which also supply demonstration trains.

It would be idle to go over the states singly for they all give extension work in connection with the state agricultural college, which invariably is either actively associated with, or an actual part of, the state university. In instances, however, certain branches are made special features of, after the fashion of Massachusetts in its correspondence system, which other states, like Illinois, Ohio, Iowa, Maine, Indiana, Kansas, Kentucky, Minnesota, Florida, New York, also have, but without the same impressive development and completeness.

READING COURSES

In New York the state college of agriculture is in affiliation with Cornell University at Ithaca. The winter course has been an established institution for 22 years and extends from the second week in November to the second week in

February. A special one week course is held the second week of March for managers of cheese factories and creameries. A Jewish Agricultural and Industrial Aid Society is an active force. This association is designed mainly to give the children of Jewish farmers a chance to attend college, a numerous series of free scholarships being given with this end in view. The course of study is of the customary character, including all subjects common to the farm, dairy, vegetable gardening, etc., including laboratory work, cow judging and testing, and veterinary hygiene. A specialty is made by the state college of reading courses, which are divided into two sections, one devoted to the farm proper and the other to the home. These are carried on in correspondence form. Lecturers and demonstrators are provided to any farmers' institute or club agreeing to pay half the travelling expenses. An extension school is established in any part of the state on forty or more persons who propose to attend, paying a fee in advance of one dollar. Travelling schools on trains are established, stops being made by arrangement. Moving pictures are also utilized.

COMMUNITY CENTRES

An additional specialty of New York state is the advancement of what are called "community centres." These are largely fair grounds that are kept open all the year round, the land being used for organized cultivation purposes and the buildings for demonstrations and lectures, when the weather or circumstances do not permit of outside work.

Maine agricultural college has been engaged in extension work for only three years, and comprises both short and free correspondence classes. Lecturers and demonstrators are freely sent to any agricultural or household science society or club. Boys' and girls' clubs and co-operative organizations receive every encouragement. A short winter course extends from the first week in January to the third week in February. A summer course is also held in July. A free monthly publication entitled, "Timely Help for Farmers" is circulated.

Kansas state agricultural college divides its extension work into three classes—reading courses, extension courses and college credit courses. For the reading courses the fee is one dollar for five lessons. For the extension courses, which consist of from ten to sixteen assignments, a fee of \$3 is charged. These courses extend to subjects which usually come under the head of manual training or technical school work. The credit courses consist of from fourteen to twenty assignments, for which a fee of \$4 is payable. All these courses

are open to residents outside the state on payment of double fees. An extensive correspondence course is maintained. It is limited to one year and to people having a common-school education above the age of 14. Members of boys' and girls' clubs are awarded prizes by the college for garden work in agricultural competitions and for success in household topics. Community Welfare Clubs are particularized institutions of Kansas.

Superintendent Bryan, of the Extension Division of the Kentucky state agricultural college, figures that of 20,000 of each bulletin sent out by the state only one in a hundred reaches a person that should apply for them and that of the one in a hundred only a small percentage read and digest the bulletins. Consequently it is imperative that ocular demonstrations taking the subjects up to the farmers' own doors should be given. Extension service, he says, is a potent worker for good to the community. Farmers' week is always the second week in January, when all kinds of conventions, accompanied by exhibitions, are held.

AWARDS OF MERIT

Utah conducts a novelty in its extension work, consisting of a system of all-round championships and sweepstake championships, for which all prize winners are eligible and clasps and medals are awarded. There is also an All-Star Club, the members of which are entitled to wear a special cap, and must be all championship winners. In Utah there are special clubs for every branch of agriculture, gardening and home economics. Utah has agriculturally taken for its maxim: "Better the Best."

Minnesota agricultural college in 1914 devoted \$116,960 to extension work. Each county made an allotment of \$1,000 and the state made a corresponding grant to each county. This was in addition to the grant received on account of the Smith-Lever bill. Publications in connection with the work are issued fortnightly and monthly.

In Wisconsin extension work cheese and butter are specialized. In Wyoming, Arizona and other western states live stock breeding is the particular feature. In Indiana, extension work is strenuously prosecuted and attracting much attention, as is proven by the fact that at 18 short courses in 1913 the average attendance at each was 569 and at 20 similar courses in

1914 the aggregate attendance was 14,020, an average for each of 701. At the farmers' institute meetings held in every county the average attendance at each was 162.3, the aggregate being 225,496. The extension staff consists of a board of trustees and an advisory committee. Every county has its agent. The short-course season extends from November 18th to March 14th. Business men as well as college, county and state subscribe liberally to the support of the boys' and girls' clubs. Educational trips are of frequent occurrence, and are always accompanied by agricultural experts, lecturers and demonstrators.

WORK IN THE SOUTH

In Florida outside or extension work is making great headway. The Farmers' Co-operative Demonstration branch of the Department of Agriculture has entered into co-operative arrangements with the extension division of the university and by means of county agents, demonstrators and lecturers much good is being done. In north and west Florida attention has been devoted mainly to cotton and corn, but the importance of live stock and forage crops are being emphasized. In southern Florida the work is more diversified, the citrus industry alone running to eight million boxes. Short courses are held and all the other branches of extension work diligently prosecuted.

In Virginia, Georgia and Alabama, not only are there extension services for the white population but special attention is paid to the education, in agricultural subjects, of the coloured people. The Hampton Normal and Agricultural Institute of Virginia, devoted exclusively to negroes and Indians, has 1,309 students. Short courses are held, including a summer course from June 16th to July 14th, or thereabouts, with extra classes for boys and girls. Farmers' conferences, for both men and women, constantly take place. All the states have their district or county agents. In Alabama, the Tuskegee Normal and Industrial Institute, established 34 years ago for the higher education of the coloured people, has an endowment fund of over three million dollars. Extension work in agriculture is extensively carried on. In 1909 boys' corn clubs were inaugurated with an enrolment of 269 members. Three years later the membership was 10,894 and in 1914 was upwards of fourteen thousand, all white.

ALFALFA ON THE CANADIAN PACIFIC RAILWAY FARMS

BY DR. J. G. RUTHERFORD, SUPERINTENDENT OF AGRICULTURE AND ANIMAL INDUSTRY

THE various alfalfa fields on the farms of the Canadian Pacific Railway Company have come through the winter in an exceedingly satisfactory condition.

In the Lethbridge and Coaldale districts there has been no winter killing whatever and the stand of alfalfa is excellent not only on the older fields but on those seeded last year. In Coaldale we have 700 acres sowed last spring and now showing a magnificent stand, promising a heavy crop for the coming season.

At Strathmore, both on our own farms and on those of the many settlers now growing alfalfa, there has been little or no winter killing. Fields sown both with and without nurse crops are in excellent condition.

In the Keoma district only one case of winter killing is reported, and although I have not yet had time to investigate the cause in this particular instance, I hope to be able to do so in the near future.

In the Bassano and Brocks districts, which are both in the eastern section of the irrigation belt, all alfalfa wintered well, none having been killed out. The stand is excellent and the prospects good.

In the Bassano Colony there are a number of fields, which, contrary to the accepted theories, were put in on new breaking under irrigation and these have also done well. In this connection, however, it is only right to say that the people who planted in this way were settlers from

Colorado who thoroughly understood the growing of alfalfa and the use of irrigation water. Needless to say they spared no pains in getting their land in the best possible shape before seeding.

With regard to varieties, I may say that in the Strathmore district, Turkestan alfalfa, grown from seed sold by the Canadian Pacific Railway Company in 1912, has proved to be admirably adapted to the district and the conditions found there. It has shown itself very hardy and well suited to the climate.

Some Grimm alfalfa sowed at the same time has also done well. Both of these strains sown last season on the experimental plots at the Demonstration Farm have wintered well but, if anything, the Turkestan variety seems to have a stand and to be generally more promising.

As a rule alfalfa is sown in this province without a nurse crop but even when sown with a nurse crop the results are generally quite satisfactory when the soil and cultivation conditions have been given proper attention.

The alfalfa crop throughout Alberta is generally believed to be at least two weeks in advance of what it was at this time last year.

To sum up the situation the outlook for the profitable growing of alfalfa in Alberta is very bright and although it may be a little early, to speak with absolute certainty regarding all districts, we have so far nothing at all discouraging to report.

AGRICULTURE AND THE WAR

THERE is a great satisfaction in the growing recognition of the part that rural activities play in the economy of our national life, and at a time such as this the needful lessons are perhaps driven home to our minds in a clearer way than would have been otherwise possible.

The part that agriculture is playing in this war is of primal importance. I can only touch in the briefest way on some of the phases of this great question. Without adequate food supplies war could be impossible and it becomes a vital thing to us to consider the relation of food production to the success of those millions who are fighting our battles. War is a great destroyer of food. In that small, heroic and ill-starred country which has borne the

brunt of this great conflict—Belgium—there has, for twenty years past, been a new spirit breathed into her rural life and for a population of 589 persons to the square mile she was, by skilful methods and a fine thrift, doing a work on her farms that was little short of marvelous. To-day the most conservative estimate that could be placed on the ruin to her farms and farm houses would not be less than \$500,000,000. France, with an equally fine intelligence and energy, produces more wheat on her comparatively small territory than do our Prairie Provinces combined. Russia, which ordinarily has produced nearly one-quarter of the world's wheat, has drafted millions of its workers into the field of battle. Hungary, whose average production has been

145,000,000 bushels of wheat, or practically the same as our own three Prairie Provinces produced last year, is given up to the turmoil and tramp of armed men. In all lines of agricultural production these countries must feel the pressure and pinch of war.

To-day, so keen is the true appreciation of these things that in the last month ploughing and planting have been going on in France to within a mile of the British trenches—old men and boys ploughing, while women do the sowing. Sir John French arranged that none of his army should encroach on farm land, except under most urgent necessity, and to trample ploughed land was an offence that had to be explained at the British headquarters. Reviewing a part of the forces which had participated in the battle of Neuve Chapelle, General French rode to where the men were drawn up in small bodies. "I can ride around and meet them," he said, "I would rather do that than spoil a wheat crop."

SHOULD STRAIN TO PRODUCE

Surely, then, it is for us, with our broad acres, with peaceful freedom to do our work, to strain all our energies to produce those things which are vital necessities to those who are fighting for the defence of our institutions and liberties.

We can rejoice in the fact that the men of Canada are strongly responsive to this great appeal and that to-day we have reason to believe that the yields of the farms of Canada will be this year the greatest in the history of the country. My reports from our great West are deeply gratifying. The acreage sown is at least 20 per cent greater than before, but this is only one feature. The soil itself has been

prepared with far greater care and intelligence. In the southern districts of Alberta and Saskatchewan, where drouth did so cruel a work last year, there is a greater amount of moisture in the soil than at any time on record, and, with favourable conditions, I see no reason to doubt the production of the biggest grain crop in the history of Canada.

If bigger crop and higher prices bring fuller encouragement to the farmers of Canada, it may be hoped that the lesson will also come which will put agriculture and other industries on a sounder basis than before. We have to learn to do something more than to spend \$2.00 to produce \$1.90. We have to eliminate waste and to grasp the eternal truth that it is only intelligent and thorough work which pays in agriculture, or in anything else.

If we are to strengthen and swell our rural population, it is obvious that we must make farm life not only healthy and happy, but profitable, and we believe that no better service can be given in this respect than the strengthening of agricultural education all along the line. Let a boy or a girl be once interested in the study of the problems of nature and the battle is half won. We can link the great forces of nature to our own efforts only when we understand them. It will be a happy day in Canada, not only for rural, but for our city life, when we realize that agriculture can not only be made profitable, but that it enlists the highest powers of the mind and can yield in the fullest measure that true joy which comes from the application of intelligence to the problems of life and growth which wait for solution in the fields around us.—*Extract from address of Hon. Martin Burrell, Minister of Agriculture, delivered before the members of the Canadian Club, Hamilton.*

THE SITUATION IN AUSTRALIA

ADVICES from Australia reveal an appalling state of things consequent upon the drought. The Riverina district in South Australia has lost 8,000,000 sheep and Victoria 3,570,000 sheep, 240,860 beef cattle and 131,188 dairy cattle. For these two districts the loss in cattle and sheep runs in value to \$53,635,542. Two-thirds of the settled area of Australia are said to be bare of vegetation. In the Riverina district in ordinary circumstances about 10,000,000 sheep are carried. On March 20th this year not more than 2,000,000 were to be found there, and these were so weak that many were rapidly dying. The ground had become so hard that it was almost impossible to get the plough in. Six horses fed on chaff at \$50 per ton, were required to

do the work of four. Even if rain were to fall plentifully there would be a shortage in the wheat area of a million acres, as there were no hopes of sowing more than 1,500,000 acres under the most favourable conditions.

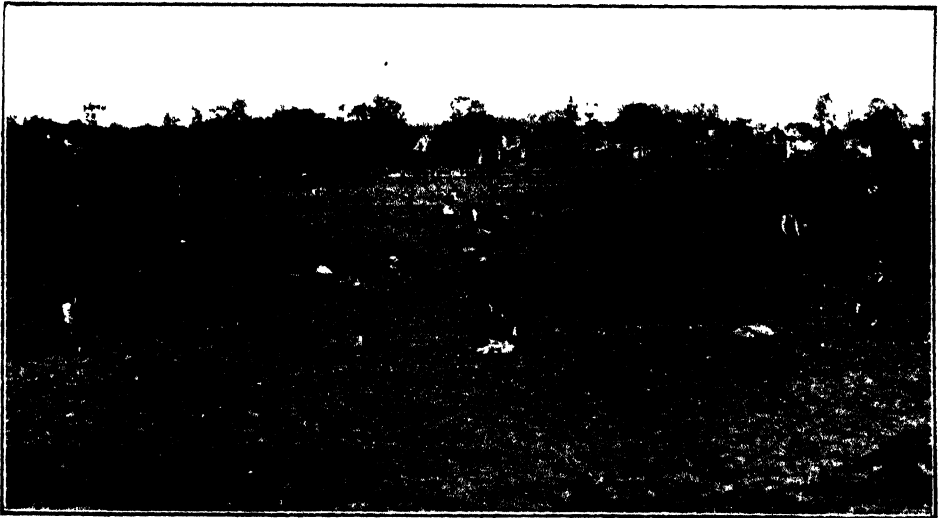
This very grave situation surely emphasizes the responsibility that looks likely to fall upon Canada to supply not alone the allied countries of Belgium, Great Britain, France and Italy, with foodstuffs but other parts of the world as well, including other parts of the empire, whose call will of course be as loud as any. In fact, with an open route across the Pacific, it is to this country essentially that the sister colony will turn for such supplies as she most needs.

VACANT LOT GARDENS IN OTTAWA

AS an outcome of the Patriotism and Production campaign the gardening of vacant lots has become well established in Ottawa. Although the work was not commenced until late in the season, a large number of plots are being put into potatoes and other vegetables. The land being used is what is known as the Glebe property owned by the St. Andrew's Church of the city. At the instance of Mr. W. T. Macoun, Dominion Horticulturist, the trustees of this property have thrown it open for the use of poor families and those in moderate circumstances. The land, which is in one block, has been divided into one hundred and twenty-

at the back of his plot, so that the potato plots can all be easily reached by the sprayer which the trustees have provided. The Grand Trunk Railway Company have given the use of two old box cars, in which the implements used in the cultivation and working of the plots will be kept. The city is providing water and sanitary closets. Night and day watchmen are being provided by the trustees. Following are the by-laws governing the free garden plots:—

- (1) Plots on which cultivation had not commenced on May 25th were liable to confiscation.



OTTAWA VACANT LOT GARDENERS AT WORK

eight plots, most of which are one hundred by fifty feet. For these one hundred and twenty-eight plots one hundred and seventy-three applications have been received. Many others would be made if the land were available. Much of the land has already been planted and the gardeners are most enthusiastic.

The trustees of the property have provided sufficient funds to have the work carried out properly. Besides laying out the land with roads and paths, the trustees have had it ploughed and harrowed and have even gone so far as to remove clumps of small trees in order to satisfy, as far as possible, the demand for plots. Provision is being made that every gardener who wants to raise potatoes, must grow them

- (2) No crops shall be sown or planted on plots within two feet of any boundary
- (3) Where potatoes are planted they must be placed at the back end of the lot.
- (4) A reasonable amount of care in the cultivation is expected, otherwise plots are liable to confiscation.

Arrangements are being made for the holding of a competition for which prizes will be offered, in accordance with the plan described on page 210 of the March number of THE AGRICULTURAL GAZETTE.

The committee in charge of this work is composed of Mr. W. T. Macoun, Dr. Jas. W. Robertson, and Gilbert Allan, secretary.

GOOD SEED IN DEMAND

INQUIRY as to whether there has been any increased demand for pure seed has elicited a number of replies showing that there certainly has been. In the absence of Professor C. A. Zavitz, who was in California, Mr. W. J. Squirrell, the associate professor at the Ontario Agricultural College, has furnished a table indicating that there has been a decided increase in the request for barley, spring wheat, field peas, alfalfa and field beans. This table shows an increase compared with last year all down the line except in only a few instances. Fall turnips show a decline and so, too, does sweet corn, and others, like spring rye, mangels, grass peas, rape, kale and field cabbage, are stationary. On the other hand all varieties of barley, especially hullless, exhibit an increase from 196 to 254, while spring wheat has gone from 82 to 205, field peas from 203 to 353, buckwheat from 27 to 46, spring rye from 32 to 43, husking corn from 178 to 205, sugar beets for feed purposes from 65 to 79, Swedish turnips from 53 to 73, carrots from 64 to 79, fodder and silage corn from 42 to 56, sorghum from 12 to 25, alfalfa from 195 to 236 and field beans from 108 to 226. Slight increases are made by oats, namely, from 654 to 660, soy, soja or Japanese beans from 35 to 42, millets from 13 to 18, four varieties of grasses from 15 to 21, and three grain mixtures for grain

production.

Seed merchants generally report equally as gratifying results. They all agree that the tendency is towards using the higher grade seeds. They also bear testimony to the good effect the recent campaign for better production has had in that direction. Nor does the improvement appear limited in its scope. It covers not only grain but also all sorts of garden and field root seeds. Several firms notice a large increase in red clover this year compared with last, one who say they have gone thoroughly into the subject, declare it amounts to as much as three hundred per cent. Alsike, alfalfa and No. 2 timothy also show an important advance. Another firm testifies that there has been a marked tendency for better seed. Yet another says that "not only has the farming been greater, but the demand has been generally for the finest selection of seed stocks." A Fourth firm writes: "There is no doubt but that the agitation and educational work which has been done has had a beneficial effect, causing the planter to give more thought to the use of high grade stocks." Similar evidence both as regards the disposition to take increased care in the selection of seed, and as to the good influence exercised by the recent campaign, come from divergent parts of the country, from in fact all the main centres.

NOTES ON CROP PROSPECTS ABROAD

THE Bulletin of Agricultural and Commercial Statistics for March, 1915, gives figures which may be taken to represent the world's production of cereals in the harvest year 1914-15. The countries included are Germany, Austria, Hungary, Belgium, Bulgaria, Denmark, Spain, France, Great Britain and Ireland, Italy, Luxemburg, Norway, Netherlands, Rumania, Russia in Europe, Sweden, Switzerland, Canada, United States, India, Japan, Russia in Asia, Algeria, Egypt, Tunis, Argentina, Chile, Australia, and New Zealand.

Wheat.—The total production in the above-mentioned countries amounted to 460,900,000 qrs. against 501,520,000 qrs. in 1913-14, or a decrease of 8.1 per cent. The production, however, was greater by 0.7 per cent than the average production of the five preceding years, and by 7.5 per cent than the average of the 10 preceding years.

Rye.—The production in the above countries, excluding Great Britain, India, Japan,

Algeria, Egypt, Turis, Chile, Australia, and New Zealand, is placed at 203,159,000 qrs. against 218,013,000 qrs. in 1913-14, or a decrease of 6.8 per cent. It was also smaller by 0.4 per cent than the average of the five preceding years, but greater than the average of the 10 preceding years by 5.5 per cent.

Barley.—For the same group of countries with the exception of India, Chile, and Australia, the production is estimated at 168,293,000 qrs. in 1914-15 against 193,168,000 qrs. in the previous harvest year, or a reduction of 13 per cent. It was also smaller by 5 per cent than the average of the five preceding years, but greater by 2.6 per cent than the average of the ten preceding years.

Oats.—For the same countries as aforementioned, omitting India, Egypt, Chile, and Australia, the total production is placed at 441,600,000 qrs. against 490,330,000 qrs. in 1913-14, or a diminution of 9.9 per cent. It was also smaller than the average of the five preceding years by 2.7 per cent, but

greater than the average of the ten preceding years by 6.2 per cent.

India.—The preliminary estimate of the wheat crop places the production at 48,986,000 qrs. in 1914-15, against 39,315 000 qrs. in 1813-14, or an increase of 24.6 per cent, while the area cultivated was also greater by 23 per cent.

Sowing of winter cereals.—The areas estimated to have been sown to cereals in 1914-15, compared with the areas sown during the corresponding period of 1913-14, expressed as per centages, are as follows:—Wheat.—Denmark, 103; Great Britain, 110; Italy, 105; Luxemburg, 107; Rumania, 92; Switzerland, 110; Canada, 109; United States, 111; Japan, 99. Rye.—Denmark, 93; Luxemburg, 106; Rumania 76; Switzerland, 110; United States, 103. Barley.—Rumania, 71; Switzerland, 105; Japan, 102.

France.—The official report on the condition of the crops in France on 1st March is as follows:—Winter wheat 68 as com-

pared with 71 in 1914, rye, 72 against 73, winter barley, 69 against 69, and winter oats 70 against 66 in 1914 (110—very good 80—good, 60—fairly good).—London Grain, Seed and Oil Reporter, 24th March.

Australia.—The latest official estimate of the wheat harvest in the six Australian States gives the yield at a little more than 29½ million bushels, as compared with 108 million bushels in 1913, and 96 million bushels in 1912.—London Grain, Seed and Oil Reporter, 11th March.

England and Wales.—Owing to rain and frost the season is rather backward. Flocks and herds are generally healthy, but in localities the fall of lambs has been light. The total area under wheat is about 10 per cent greater than last year. On April 1st, early sown wheat on light land was looking well, but in many districts wheat on heavy land and late-sown autumn wheat on light land was backward and had lost colour. Labour is deficient, although wages show a tendency to rise.

AGRICULTURAL ROLL OF HONOUR

THE following list contains the names of the graduates, under-graduates and students of the Canadian colleges and schools of agriculture and of veterinary science, and of the officials of provincial departments of agriculture who are members of Canadian overseas or Imperial forces:—

COLLEGES AND SCHOOLS

NOVA SCOTIA AGRICULTURAL COLLEGE

Blanchard, B.; Bouden, Eric; Butler, E. A.; Bragg, Paul.
Collingwood, Gordon; Chipman, Don; Cunningham, Gordon; Cunningham, J. L. Donaldson, Ralph.
Frier, Arthur M.; Fairweather, H. B.; Filmore, W. R.
Holman, Douglas B.; Hoyt, J. H.
Kelsall, A.
Landels, James; Lewis, Randall; Leak, Charles F.
McCharles, M. J.; McIvor, J. H.; McMahon, A. E.; March, Dudley.
Peterson, Clyde.
Robinson, Milton; Robertson, W. G.
Sircom, George; Shipton, I. C.; Saunders K. H.; Smith, Clarence.
Weldon, A. H.

LAVAL VETERINARY SCHOOL, MONTREAL

Chagnon, Lieut. J.
Duhaunt, Capt. B.; Dagneault, Capt. A.; Desmarteau, W.B.

Grignon, Lieut. R.; Guertin, Lieut. A. T.
Piché, Lt.-Col. M. A.
Souillard, Capt. P. P.
Trudel, Lieut. H. A.

MACDONALD COLLEGE

Ashby, P. H.
Baily, Hugh R. D.; Black, Charles; Buckland, W. B.; Brighton, H. W.; Bailey, H. C.; Bouden, C. E.; Brunt, John W.
Critchley, Walter R.; Cowper, Hugh S.; Collingwood, G. F.
Dreher, C. F. W.; Drouin, J. E.
Evans, H. I.
Flood, R. R.
Hamilton, Richard I.; Huestis, Ralph R.; Hill, G. M.; Heslop, Fred H.
Lothian, David E.; Lefebvre, J. G.
Matthews, Albert E.; McClintock, Corp. L. D.; MacFarlane, John R. N.; Montgomery, Arthur R.; Milne, A. R.; McMahon, E. A.; McCormick, J. H.; McKechnie, H. E.; Mitchell, H. D.; MacFarlane, N. C.
Piddington, Arthur G.; Peterson, W. J.; Peterson, C. F.
Robinson, James Milton; Richardson, J. J. G.; Roy, Trooper J. S.
Smith, W. J.; Signoret, Sgt. Major M. C.; Smillie, Henry M.; St. George, Percival T.; Spendlove, J. R.
Turner, William H.
Viane, Edgar.
Wilson, Charles A.; Walsh, G. Brock; Williamson, H. F.; Wilcox, Charles J.; Young, Lieut. Geo. R.

SCHOOL OF AGRICULTURE, STE.
ANNE DE LA POCATIÈRE
Huguenin, J. M.L.D.; Leboucq, M.
Robert; Pasquet, Joseph.

ONTARIO AGRICULTURAL COLLEGE

Arnold, C. L.; Atkins, J. P. H.
Brooks, G. F.; Bagsley, H. E.; Bradley,
C. A.; Beatty, H. A.; Brown, W. J.;
Bland, A. G.; Blanchard, B. H. C.;
Bertram, L.; Bond, J. H. M.; Burnett,
R. T.; Barrett, H. H. G.; Baker, F. H.;
Birdsall, F. E.; Bell-Irving, A.
Chester, W. M.; Christie, H. F.;
Chamberlain, C.; Clarry, A. G.; Cory, A.;
Carpenter, G. H.; Coke, E. F.; Cherry,
P. A. B.; Clark, T. O.; Cleaves, A. C.;
Campbell, A. M.; Cleverley, A. C.; Camp-
bell, H. D.; Caldwell, L. V.; Campbell,
J. W. R.; Chauncey, R. J.; Campbell,
Walter N.
Dickson, N.; Donaldson, E. R.; Dow,
N. D.; Donaldson, R. W.; Davison, W.;
Davis, Herb.; Downey, G. A.; Donaldson,
J. R.

Everett, R. E.; Edye, H. K.;
Ferguson, P. H.; Foreman, C. F.;
Fitzgerald, E. F.; Fitzpatrick, A. C.;
Fairdough, E. R.
Garlick, G.; Grange, J. B.; Goodall,
G. M.; Golding, N. S.
Hart, E. W.; Harrison, F. C.; Hill, L.;
Hoodless, J. B.; Hessel, E. C.; Hudson,
H. F.; Hockett, H. C.; Hextall, L. J.;
Hartley, R. S.; Hirst, G. S.; Hearle, E.;
Holmden, R.; Hammond, W. S.; Herder,
H. C.

Innes, R.; Iwanami, J.
Jordon, M. D.; Jones, M.; Jensen, E.
Kennedy, S.; Kedey, W. M.; King, V.;
Knight, C. F.; Keegan, H. L.; Kelsor,
M. U.; Kirkley, F. R.; Knowles, F. G.
Leach, W. B.; Lawrence, C. A.; Lewis,
R. M.; Lattimer, E.; Lord, S. N.;
Leppan, H. D.; Lindsay, H. H.; Lever,
J.; Lee, G. D.; Loghrin, Samuel.
Murray, W. J. R.; Macdonald, R.;
Murray, Robt.; Mosley, L. A.; McGuire,
M. E.; McLaren, Q.; Mollison, R. W.;
Millar, G. C.; Murray, H. G.;
McClymont, A. C.; McEwan, C. F.;
Nourse, C. B.; Neilson, M. A.; Neal,
C. W.

Orlowski, A. J.
Packham, S.; Pearson, H. W.; Percival,
S. E.; Peren, G. S.; Pratt, W. J.; Phillips,
H. L.; Pereira, A. O.; Parker, G. B.
Read, D. G.; Rogers, C. H.; Rogers, S.;
Rogers, C.; Rumsby, R.; Ryan, K.
Sampson, H.; Sanderson, C. E.;
Seymour, C. N.; Smedley, G.; Stones,
J. G. K.; Steele, J. A.; Shipton, J. S.;
Stansfield, N.; Scott, Maxwell; Stairs, K.;
Smylie, J. S.; Shuttleworth, E. H.
Townsend, W. A.; Thompson, Stanley
Thompson, G. A.

Unwin, G. H.
Ware, B. W.; Woolley, H. H.; Waters,
M. S.; Western, E. A.; White, O. C.;
Wearne, H.; Wilson, N. I.; Woodgate,
H. A.; Westra, H.; Wilson, S. C.; Water-
fall, J. F.; Wearne, G. A.

MANITOBA AGRICULTURAL COLLEGE

Butchart, Russell; Blows, A. G.
Cogland, Thomas; Cunningham, R. A.;
Dyer, Harry; Dyer, Major Hugh M.;
de Montbel, Andra L.
Ewens, Basil.
Fee, Charles H.
Gardner, John; Gladstone, S. D.;
Glover, Ray.
Harris, R. T.; Hepburn, Leonard.
James, H.; Jonason, Peter.
Kerr, Oscar.
Lamb, C. C.
McPherson, Robt.; McIntosh, J. F.;
Miller, W.; Muir, Elliott.
Nunnerley, George.
Robinson, E. R.; Rogers, R. J.
Shinner, E.; Smith, Harry.
Worswick, B.; Worrall, Lloyd.

UNIVERSITY OF SASKATCHEWAN

Anderson, R. W. H.
Cameron, J.
Day, G.; Duncan, W. G.
Fisher, J.; Feenie, C.
Hampson, T.; Hooper, W. J.
Matthews, A. F.
Neatby, A. F.
Partlett, A. E.; Patterson, J. D.
Porter, T. J.
Quick, L. A.
West, E.; Whittingham, W. R.

SCHOOL OF AGRICULTURE, CLARESHOLM, ALBERTA

Middleton, A. J.

SCHOOL OF AGRICULTURE, OLDS, ALBERTA

Burns, Roy.
Georges-Figaro, Raymond.
Snider, Donald; Simon, Ralph.
Whiteside, William H.

SCHOOL OF AGRICULTURE, VERMILION, ALBERTA

Shaw, Floyd; Sheppard, William.

ONTARIO VETERINARY COLLEGE, TORONTO, ONT.

Brand, W. D.; Baker, C. W.; Blan-
chard, W. H.; Buie, J.; Bennett, J. E.;
Bailey, A. E.; Barnes, F. M.; Brand,
J. M.; Brunet, O.

Coombs, F. M.; Chils, T.; Cunningham, J. R.; Carson, M.; Cunningham, C. G.; Cutcliffe, A. B.; Coleburn, H.; Collett, H. B.

Durkin, L. H.

Early, F. D.; Ellsworth, L. H.; Evans, T. C.; Elliott, W. J.; Edgett, C. E.

Farrell, J. J.

Gibson, A. S.

Hyslop, H. T.; Hall, R. J.; Hayter, G. P.; Hill, W. R.

Kenney, W. G. C.; Kerr, S. S.

Laurie, J. H.

McCullough, H.; MacIntosh, R. D.; Morrow, J. J.; McDonald, R. W.; Medd, W. H. B.; McGee, H. E.; McBride, J.

Neely, M. J.; Neill, W. J.

O'Gogerty, M. G.

Perry, F. P.; Pilkey, M.; Parmiter, F.; Robinson, P. A.; Rogers, W. T.; Rose, G. A.; Reed, D. V.; Richmond, A. R. B.

Stuart, R. M.; Scott, J. D.; Stanford, J. A.

Thornewill, G. S.; Thompson, C. F.; Titus, R. C.

Vickers, J. R.

Wolfe, C. E.; Williams, R. N. M.; Williams, J. E.; Wilson, J. H.; Woods, T. Z.

DEPARTMENTS OF AGRICULTURE

PRINCE EDWARD ISLAND

Davison, Wilfred.

ONTARIO

Amyot, J. A., M.D.

Brodie, T. G., M.D., F.R.S.

Curtis, N., Resident Master, Ontario Agricultural College; Connell, W. T., M.D.

Richmond, A. R. B., V.S., B.V.Sc.

Saunders, C. G., V.S., B.V.Sc.; Smith, D. King, M.D., V.S.; Shaver, F. D., B.S.A.

QUEBEC

Comire, Hector.

Leboucq, Robert.

Wigny, Maurice.

SASKATCHEWAN

Carter, George; Cogland, T. W.

Domaille, T.; Dixon, Alex.

Macdonald, Daniel.

Nockett, Walter.

Sorenson, M. B.; Smith, H. S.

BRITISH COLUMBIA

Casey, E.; Creese, H. H.

Payne, F. N.; Paul, A. S.

Shipton, B.

SOCIETIES AND ASSOCIATIONS

ONTARIO

The breeders of the eastern part of Bruce county recently met at Walkerton, Ontario, when they decided to hold a pure bred stock sale in February or March, 1916, at Walkerton, and elected the following officers:—

President, T. H. Jasper, Carlsruhe; vice-president, W. A. Tolton, Walkerton; secretary, N. C. MacKay, B.S.A., District Representative, Walkerton; directors: Jas. Thompson, Mildmay; W. T. Hopper, Paisley; Geo. B. Armstrong, Teeswater; Jacob Millar, Mildmay; Herbert Pletsch, Carlsruhe; Ab. Rowand, Henry Hossfeld, Jas. Moore, Jas. L. Tolton and Jacob Dippel, Walkerton.

QUEBEC

PROTECTION OF PLANTS

The seventh annual meeting of the Quebec Society for the Protection of Plants was held on March 11th at Macdonald College. Papers were read by Mr. J. C. Chapais, delegate to the Entomological Society meeting in Toronto; Mr. E. M. Duporte, for Brother Victorin, of Longueuil College on "Some Silent Invaders of our Fields;" Father Leopold, Oka

Agricultural Institute, on the "Woolly Aphis in the province of Quebec;" Professor John Adams, Assistant Dominion Botanist, on "The Medicinal Plants of Quebec," and on "Potato Diseases," the latter prepared by the Dominion Botanist; Professor Crosby, of Cornell University, on "Some Successes and Failures in controlling Insects," and by Messrs. Strickland and Chrystal, of the Entomological Branch, Ottawa, the first-named on "The Brown-tail Moth in New Brunswick and Nova Scotia," and the latter on "The Ravages of Insects in Stanley Park, Vancouver, B.C.," both with lantern slides. President Lochhead addressed the gathering on "The Webb of Life," showing that all nature was inter-related. Papers by Mr. Duporte on "The Parasites of the Bud Moth," by Mr. P. I. Bryce on "Immunity of Orchard Trees from Disease," by Professor Fraser on "Cereal Rusts," and by Mr. A. F. Winn, of Montreal, will appear in the annual report, but were not read for lack of time.

SHEEP-BREEDERS IN SESSION

A meeting of sheep-breeders of Sherbrooke county was held at Lennoxville, Quebec, on March 24th, at which Mr. A. A. MacMillan, B.S.A., who is in charge of

Sheep Husbandry at Macdonald College, delivered an address on "The Co-operative Marketing of Wool." A discussion followed which led to the organization of the "Sherbrook County Sheep-breeders' and Wool Growers' Association," with Mr. A. F. Ward, president; Mr. James Woodward, vice-president; Mr. W. G. MacDougall, secretary-treasurer; Messrs. N. Dean, I. J. Parvell, W. P. Berwick, W. M. Ford, Ed. Hammond and Guy Carr, directors. Demonstrations will be given on the proper methods of preparing wool for the market and the wool will be sent to Lennoxville to be graded and sold.

ALBERTA ANNUAL DAIRYMEN'S CONVENTION

The Annual Dairymen's Convention was held at Olds, Alberta, on April 8th. Hon. Duncan Marshall, Minister of Agriculture, being busy with his legislative duties, the Deputy Minister, Mr. George Harcourt, presided. In his opening address, Mr. Harcourt enlarged on the advantages Alberta possessed in the way of products of the dairy. He also alluded to the excellent results derived from the provincial butter scoring contest, the first prize in which was won by the Calgary Central Creamery with a score of 95.02 points in 621 churnings. There were only seven points between the first and third prize winners. It was shown that the estimated value of Alberta's dairy products is now \$10,500,000, that 47 creameries are in operation, and that the yield of creamery butter in 1914 was 5,250,000 pounds, an increase of a million pounds compared

with the previous year. Nineteen creamery operators availed themselves of the marketing service of the Department of Agriculture, prices ranging from 22.61 to 27.15 cents per pound. Prof. W. J. Elliot, Principal of the Olds Agricultural School, gave the results of herd tests. Thirty-four herds were tested, comprising 166 cows, of which 119 failed to finish the test. Forty-eight cows gave 5,000 pounds, or over in the eight months, and 35 gave from 4,000 to 5,000 pounds.

CATTLE BREEDERS' ASSOCIATION

The Alberta Cattle Breeders, at the annual meeting recently, elected the following officers for the ensuing year:—

President, J. L. Walters; first vice-president, W. Sharpe; second vice-president, P. M. Bredt; directors: P. M. Bredt, J. L. Walters, Rowland Ness, J. Laycock, J. Sharpe, H. Mace, J. Lattimer, L. Hutchinson, A. E. Shuttleworth, W. Sharpe, J. Huntley, H. Wright, F. Collicutt, T. P. Lyall, George Lane.

HORSE BREEDERS' ASSOCIATION

The following are the officers of the Alberta Horse Breeders' Association elected at the annual meeting of the association held in Calgary:—

Hon. President, Hon. A. L. Sifton; president, George Lane, Pekisko; first vice-president, Dr. J. G. Rutherford; second vice-president, Geo. Hoadley, M.P.P.; general directors: W. B. Thorne, H. Bannister, W. Moodie, Duncan F. S. Jacobs, P. M. Bredt, R. J. Bevan, W. Stuart, and A. L. Dollar.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

PUBLICATIONS BRANCH

The Potato, Pamphlet No. 2, Publications Branch; a reprint of articles that appeared in THE AGRICULTURAL GAZETTE for April, 1915. Further than to say that this pamphlet is literally a monograph on the *Solanum tuberosum*, that should be widely read and studied, it is not necessary to more than state that the articles are by the most experienced and most practical experts known to Canada and that they cover every province.

THE SEED BRANCH

Weeds and Weed Seeds, illustrated and described; Bulletin No. S 8, Seed Branch, George H. Clark, Seed Commissioner. In

this 67-page bulletin, the nature and affiliation of no fewer than 114 weeds, 28 of which are classed as "noxious" under The Seed Control Act, 1911, are minutely described with their methods of eradication. Each weed with its seed is illustrated with a deftness and exactitude that if the original is seen it can hardly fail of identification. It is a bulletin that should reach the hands of every cultivator of the soil, for some species of the weeds dealt with attach themselves to some species of the product of farm and garden. In his letter of endorsement to the Minister, Commissioner Clark explains that the bulletin is intended to convey in convenient form the essential matter contained in the expensively illustrated book, "Farm Weeds," of which two editions have been exhausted. Much that is new, resulting from investigation and research by officers of the

Branch, has been added. It is not too much to say that the work has been well and thoroughly prepared, and as far as possible is exhaustive.

THE ENTOMOLOGICAL BRANCH

House Fly Control, by C. Gordon Hewitt, D.Sc., Dominion Entomologist. This is a four-page leaflet of an article comprehensively dealing with the House Fly pest that appeared in the last number of *THE AGRICULTURAL GAZETTE*—or in No. 5, Vol. 2, May, 1915. It is especially commended to newspapers as dealing with a subject that the general public is quite as much interested in as the farming community, indeed if not more so from being in closer confinement.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE AND OF EDUCATION

NOVA SCOTIA

Manufacture of Dairy Products on the Farm; Bulletin No. 6, of the Nova Scotia Department of Agriculture, by W. A. Mackay, Dairy Superintendent, Truro, N.S. This bulletin is designed to stimulate the dairy industry in the province. It consists of 16 pages, giving general instructions on the caring of milk and on butter making and receipts for making various kinds of ice-cream. Rules for milk and cream testing are also supplied.

Drainage; by B. H. Landels, B.S.A., Superintendent of Drainage Department of the Nova Scotia Department of Agriculture; Bulletin No. 7, 34 pages. The bulletin is intended to apply various things which have been written and said to the prevailing conditions in Nova Scotia. The subject of underdrainage is exhaustively dealt with. How water is lost to the soil is explained. Constructive methods of drains are fully set forth in letter press, and by illustration. In short the bulletin is a valuable and instructive compendium on the matter of drainage and the most advisable systems to adopt.

Recent publications from the transactions of the Nova Scotian Institute of Science are, "The Phenology of Nova Scotia, 1912," by A. H. MacKay, LL.D., Superintendent of Education, Nova Scotia, and "Senecio Jacobaea and Callimorpha Jacobaea (The Cattle Killing Ragwort and the Cinnabar Moth)", by Henry S. Poole, D. Sc., of Guildford, Surrey, England. The Department of Education, Halifax, N.S., is circulating with these publications, as an aid to the study of phenology, "Phenological Observations, Canada, 1913," by F. F. Payne under the direction of R. F. Stupart F.R.S.C., and published by the Royal Society of Canada last year.

QUEBEC

Completion of Agricultural Merit, 1914. Report of the judges of the twenty-fifth annual agricultural merit competition of the province of Quebec. The records, all very explicit in detail, are accompanied by well-defined illustrations and diagrams with some account of the properties of the successful competitors. An enlarged table of the points awarded for the various subjects lends appreciable value to the matter.

MACDONALD COLLEGE

The Farmers' Garden, by A. H. MacLennan, B.S.A., Lecturer in Horticulture, Macdonald College, McGill University, Quebec. Professor MacLennan in this 38-page pamphlet inculcates the principle that every farmer should have a vegetable garden. Once having made the venture he would ever have fresh products on his table. Hints and suggestions are forthcoming in every department for the cultivation of such a garden. Illustrations of frames, of hot-houses and of various growths, good and bad, are given as well as tables of the quantity of seeds required, times of planting and of period taken for maturity. Advice is also supplied regarding the care and cultivation of small fruits.

ONTARIO

A circular issued by the Lambton County Corn Growers' Association gives rules and regulations to govern, and the prizes to be awarded, in the competition for the best four acres of corn grown in the County of Lambton. Besides the Hanna trophy nearly two hundred dollars in cash are to be competed for. Entries were required on or before May 15th.

Ontario Pure Bred Live Stock Census. In addition to the returns already noted in the April and May numbers of *THE AGRICULTURAL GAZETTE*, a report has been received for Bruce county, which gives a list of the breeders of pure bred stock together with the number of animals kept by each, under the classification of breeds, male or female, under one year, under two years, and over two years. The report shows, that while the returns are, more or less incomplete, the county has 256 pure bred horses, divided as follows: Clydesdale 247, Percheron 5, Standard Bred 4; a total of 963 cattle, made up of 46 Aberdeen Angus, 5 Ayrshire, 44 Hereford, 51 Holstein, 8 Jersey and 809 Shorthorn; 1,589 sheep, comprising 294 Leicester, 140 Lincoln, 1,021 Oxford Down and 134 Shropshire; 374 swine, consisting of 36 Berkshire, 12 Hampshire, 13 Poland China, 64 Tamworth and Yorkshire 249.

Some Results of Co-operative Experiments on Races of Bees to determine their power to resist European Foul Brood is the title of an eight-page pamphlet by Morley Pettit, Provincial Apiarist. Since 1910 the author has, under the auspices of the Ontario Agricultural and Experimental Union, been directing co-operative experiments with a view to securing answers to the following questions:—

1. Are Carnolian bees as good resisters of European Foul Brood as Italians?
2. What strains of Italians, if any, are better resisters than others?
3. After this disease has been in a neighbourhood a few years, is it more easily controlled?
4. Does it become less virulent or is a strain of better resisters developed?

As the best means of presenting results, a number of letters received from bee-keepers, who co-operated in this work, are given and from them are drawn conclusions, which show that resistance is more a matter of vigour than of race or strain, although the common black bees are proven to be exceedingly poor resisters and that Carnolians are not generally as good as Italians; of these latter, eleven strains were tested but none condemned; the successful honey-producer of the future must keep his queens young and his colonies strong and vigorous; European Foul Brood is not so virulent after having been in a colony for two or three years as it is at first; resistance of bees increases as a result of natural selection, or "survival of the fittest."

Entomological Society of Ontario; forty-fifth annual report; published by the Ontario Department of Agriculture; 152 pages. This report of the proceedings of the society in 1914 is especially complete. Last year was the fifty-first in the existence of the society, which was referred to in a particularly interesting and comprehensive address delivered by the president, Dr. Gordon Hewitt, Dominion Entomologist, at the opening of the annual meeting. Dr. Hewitt traced the story of entomology in Canada from its first official recognition in 1856, when the Bureau of Agriculture and Statistics of Upper and Lower Canada (Ontario and Quebec) gave eighty pounds, or \$400, for the best three essays on the Hessian Fly and other insects. He also gave a description of the ravages of the pests in the different provinces and told of the work that was being done both by the Dominion and provincial governments in their suppression. Among other features of the report are reports from different districts and from other entomological societies as well as papers by Mr. W. Lochhead of Macdonald College, Quebec; Mr. C. E. Petch of the Entomological Branch, Ottawa; Mr. Arthur Gibson, Chief Assistant

Entomologist, Ottawa; Mr. A. W. Baker Ontario Agricultural College; Rev. Thos. W. Fyles of Ottawa; Mr. L. Cæsar, Ontario Agricultural College, and Mr. J. M. Swaine, Assistant Entomologist for Forest Insects, Ottawa. The Entomological Record for 1914 prepared by Mr. Arthur Gibson is presented. Interesting obituary notices with portraits, of Dr. William Saunders, C.M.G., and Mr. H. H. Lyman, of Montreal, the latter of whom, with Mrs. Lyman, was lost in the Empress of Ireland disaster, complete a most valuable and well illustrated publication.

MANITOBA

A circular to teachers issued by the Manitoba Department of Education contains an appeal from the Chief Game Guardian for the protection of birds, a series of agricultural questions for provincial schools, rules for judging contests and a Gardening Guide. A simultaneously issued circular gives the educational premium list for the Inter-Provincial Fair, Brandon, July 19 to 23. There will be 18 classes in general school work, 13 in manual training, 15 in cooking, 39 in sewing and 11 in drawing and colour work, open to all schools, and 6 classes in general school work and 8 in hand-work open to rural schools only.

SASKATCHEWAN

The Saskatchewan Department of Agriculture has issued a circular on the "Control of Common Insect Pests." It deals with the potato beetle, cut worm, white grub, cabbage work, plant lice and the wire worm.

A recent Bulletin issued by the live stock branch of the Saskatchewan Department of Agriculture says that choice draft horses show an upward tendency in price, and that there is a strong demand for artillery horses. Cattle show an upward trend. Sheep and lambs are in keen demand and the supply is very limited. Hogs show a slight downward tendency. Wool market is strong with an upward tendency; there has been little trading as yet in the 1915 clip.

ALBERTA

Successful Poultry Raising, by A. W. Foley, Poultry Superintendent, Bulletin No. 3, of the Poultry Branch, Department of Agriculture, Alberta; 80 pages. Mr. Foley has produced not only a comprehensive but a fairly exhaustive publication in a plain way on poultry breeding, raising and dealing. In an introduction he explains that the bulletin has been called for by the large demand for previous publica-

tions of a similar order. Starting with the origin and development of domestic poultry, the bulletin deals with the industry in general and then, with apt illustrations, furnishes suggestions relative to poultry houses and fixtures, commercial poultry plants, establishment and maintenance, egg production, summer and winter hatching, brooding and rearing, fattening, killing and marketing, poultry for exhibition, turkeys, ducks and geese, closing with an enlightening chapter on diseases and parasites.

BRITISH COLUMBIA

Instructions for Teachers. In this 24-page publication giving a general announcement of summer courses to be held in the Victoria, B.C. High School, June 29th to July 30th, special attention, as might be expected, is paid to rural and household science, although vocal music, elocution and applied arts are not overlooked.

Crop Report, No. 1, May 10th, of the Horticultural Branch of the British Columbia Department of Agriculture says that the general outlook at present is for a fruit crop slightly in excess of last year. The fruits included in this general statement are: Strawberries, raspberries, plums, sour cherries, prunes, apples and pears. Sweet cherries promise well in the interior, but a decrease on the coast. Peaches bid fair to be exceptionally abundant. Crab apples look like a decrease.

MISCELLANEOUS

The United States Department of Agriculture has issued a series of four reports referring to the employment and status of women on farms. The first refers to Social and Labour Needs, the second to Domestic Needs, the third to Educational Needs, and the fourth to Economic Needs, all founded on reports and advices from every section of the country. The information conveyed is naturally very diversified. In many cases "A Man" gives his views of what a woman should do and have, and then the woman expresses her opinions. They are united in one thing, the need of betterment, principally in social and financial conditions.

The Journal of the Board of Agriculture, April, 1915. There is much of general interest in this publication issued monthly by the British Board of Agriculture and Fisheries. Possibly the articles of widest concern in the present number is one on "Dried Yeast as a Food for Farm Stock", another on "Danish Investigations showing how Tubercular Fowls affect Pigs", and a third giving the "Present Values of Feeding Stuffs." It is interesting to note that 15.6 per cent of the agricultural labourers of Britain have gone to the war.

Cornell Rural School Leaflet. This leaflet intended for boys and girls on the first of forty-eight pages with a finely coloured illustration of the Baltimore Oriole, says: "To learn to know all the birds about your country home by sight and by their songs will be an achievement. If you learn to whistle the notes of the birds that whistle, there will be an added interest in your study." The following hints on late vegetable gardening are worth noting: "It is quite possible that several of the vegetables will be through bearing about the first of July, and we can fill their places with late vegetables for winter. Begin at the southern side of the garden, look over the plan, and decide which vegetables may be replaced and with what we shall replace them. In actual practice our plan may not work out in all cases because of a backward season or for some other reason, but it is well to be prepared, and no ground should lie idle if we can help it. The parsley, the parsnips, the onions, and the carrots surely remain all season; and probably the early beets, the early turnips, and the spinach will not be out in time for anything else to be sown. Lettuce and radishes may be followed by late cabbage, which can be set even before all the lettuce has been used. The first planting of peas will be out in time for a second planting of snap beans, and the second planting of peas may be followed by late beets. The first planting of snap beans will probably be completely used, and the vines can be pulled in time for a sowing of late turnips. The early cabbage will be out of the way in time for a sowing of late lettuce, radishes and spinach, about the middle of August." A great deal of valuable information and counsel is given on the flower garden and the utilization of school grounds as well as relating to seed-testing and weeding.

"We, that is the British Empire, had better make up our minds that in order to secure 'victory as usual,' we must strain every nerve, and that Nelson's watchword, 'England expects every man to do his duty,' means at present, not alone every man in the Navy and every man in the Army, but every man on the arable field and the pastoral grazing, every man engaged in growing food or manufacturing munitions of war, every man, every woman, and every boy and girl, who can do anything to keep the wheels of industry moving at their maximum speed."—*Scotland Yet, in The Farmers' Advocate.*

NOTES

To the table of "Federal Appropriations for Agriculture", on page 414, of the May Gazette, the following should be added:

Experimental Farms— new buildings and im- provements, tobacco curing station, renewals and re- pairs, etc., in connection with the existent buildings, fences, etc.	\$150,000
Experiments with reindeer. . . .	1,000

The Grant to Dominion Exhibition should read \$250,000, instead of \$280,000.

Demonstrations in silo building and filling are being given in British Columbia by representatives of the provincial department of Agriculture.

In the Northwestern States, reports state, a shortage in apples compared with last year is expected. Strawberries do not promise well, but raspberries do. Stone fruits will likely be an average crop. Pears indicate an increase.

The total shipment of flax seed from Montreal to United Kingdom ports in 1913 was 6,149,327 bushels, of which Hull took 2,670,091 bushels. In 1914, owing to the short crop, the shipment amounted to only 176,694 bushels, of which Hull took 82,074 bushels.

According to the Weekly Bulletin of the Trade and Commerce Department for May 17th, up to the end of March, apples to the extent of 80,257 barrels had been shipped from Boston, 58,248 barrels from Halifax, 21,854 barrels from Montreal, 15,930 barrels from Portland, 4,553 barrels from St. John, N.B., and 3,835 barrels from New York.

The following companies relating to agriculture have recently been incorporated in Saskatchewan: Western Canada Stock Farms, Limited, Saskatoon, \$250,000; Woodland Farms, Limited, Moose Jaw, \$30,000; Prairie Farms, Limited, Moose Jaw, \$20,000; and the Farmers' Pork Packing Company, Limited, Estevan, \$50,000.

W. E. Scott, Deputy Minister of Agriculture for British Columbia, has announced that the Department is now prepared to furnish barn plans to any person in the province contemplating the erection of barns.

R. M. Winslow, secretary-treasurer of the British Columbia Fruit-Growers' Association, has issued price lists of fruit packages and wrapping paper and of spraying and fertilizer supplies for members of the association.

The Department of Agriculture of Saskatchewan is making arrangements for short courses for teachers during July and August at the College of Agriculture, Saskatoon, and at the Normal School, Regina. At the college, courses in nature study, school gardening and elementary agriculture will be given and at the Normal School a course in household science.

In the Weekly Bulletin of the Trade and Commerce Department, May 17th, 1915, the Acting Trade Commissioner at Leeds, Mr. Claude Dyer, directs attention to the fact that Belgium and Russia shipped undressed flax to the United Kingdom amounting in value to twenty million dollars. In Russia military demands will leave little for export while the supply from Belgium will be absolutely *nil*. The Imperial Board of Agriculture has issued a leaflet appealing to farmers to grow more flax for fibre. Mr. Dyer thinks that now is Canada's opportunity in this line.

A government report shows that the acreage under alfalfa in Alberta has increased from 2,592 in 1910 to 11,400 in 1914, and the yield has increased in the same period from approximately 5,000 tons to 32,000. The value of the 1914 alfalfa crop is given as \$11.41 per ton, a total of \$365,000, so that alfalfa is now realizing for Alberta farmers an average of \$1,000 every day in the year. The fact that Alberta now produces two-thirds of the alfalfa grown in the prairie provinces is undoubtedly due to the large irrigation areas in the southern part of the province, where alfalfa is grown with little difficulty and gives large net returns on the labour and investment.—*Country Life in Canada, May, 1915.*

The creameries in Alberta made over 5,250,000 lb. of butter in 1914, and the total value of dairy products produced in the province last year was \$10,500,000.

In an Alberta cow-testing campaign last year 166 cows were started and inside of eight months one-quarter of them were sent to the scrap heap as dairy animals. This shows what the test will do.

The University of Wisconsin, in fulfilment of a plan to make high schools local extension centres, has sent out to 230 communities, 100,000 feet of film and 15,000 slides.

The Tenth International Dry-Farming Congress will be held at Denver, Colorado, from October 4 to 7, this year, in connection with the International Soil Products Exposition, which will extend from September 27 to October 9.

The Durham County Branch of the Ontario Department of Agriculture announces six school fairs to be held during the present year. The competitions include the growing of potatoes, corn, mangels, barley and oats, sweet peas, the raising of poultry, and the making of nature collections.

The quantities of bacon, hams and pork exported from Canada during the fiscal year ended March 31, 1915, were as follows:

Bacon	76,801,419	pounds
Hams	17,958,874	"
Pork	21,288,226	"

Total 116,048,519

The Live Stock Branch of the British Columbia Department of Agriculture has completed a series of summer meetings throughout the province to encourage the advancement of the live stock industry. The series began on May 21 and ended June 8th, the speakers were: S. H. Hopkins, Assistant Live Stock Commissioner; J. R. Terry and H. E. Upton, Provincial and Assistant Provincial Poultrymen, respectively; T. A. F. Wiancko and E. Jamieson. A number of Short Courses under the same supervision were also held during May and early June. The courses had sessions devoted to lectures and demonstrations on dairying, the latter and fodder crops forming the subjects of particular attention.

The Journal of Agriculture of South Australia notes the rise in price of frozen beef sent from that state to the Smithfield market, England, from 2½ d. per lb. in 1896 to 6½ d. in January of this year, and of Australian lamb from 3½ d. per lb., in 1897 to 6½ d. this year. In 1913, Australia shipped to Great Britain 1,084,832 quarters of beef and 4,442,517 carcasses of sheep. The Argentines sent across 4,021,531 quarters of beef.

Through the provincial Department of Agriculture the British Columbia Dairymen's Association announce a series of prize competitions. The first is for herds of over 20 cows, and the second for herds of 20 cows and under. A cup and medal are offered for the best record for fat by Ayrshires, Holsteins, Jerseys and Guernseys. Joint-record prizes are offered to principal fairs. Competitions are also encouraged for junior herds, for best pens of bacon hogs and of block hogs, and for creamery butter and milk and cream, as well as in cow-testing.

The Journal of Agriculture for New Zealand, published March 20th, 1915, contains the following among other articles: Wheat-Growing, by Dr. F. W. Hilgendorf of Lincoln College; Constructive Agriculture, by A. McTaggart, B.S.A., M.S.A.; Seeds and their Identification, by E. Bruce Levy; Dairying in Switzerland, with particular emphasis on Cheesemaking and City Milk-supply, by W. Wright, Inspector of New Zealand dairy produce in London, and Lucerne-Co-operative field trials in the North Island, by G. De S. Bayliss.

Mr. W. E. Scott, Deputy Minister of Agriculture for British Columbia, has announced certain expenditures in connection with assistance to flower shows given by women's institutes throughout the province. The assistance given may be summarized as follows:—

A per capita grant of 25 per cent in addition to the grant made under the authority of the Agricultural Associations Act 1914, will be given to institutes holding flower shows or an exhibition of women's work, or a combined flower show and such exhibition in their own district.

Prizes will be offered for competition at such shows for collections of bulbs, sweet-peas, roses, dahlias, and perennials, or other varieties as may be decided by the institute, the prizes to consist of books awarded by the Department, as follows:—Adults, 1st and 2nd prizes. Juveniles, three prizes.

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- Do You Know Your Weeds,
Faith Fyles, B.A., Assistant Botanist, Department of Agriculture, Ottawa, *The Maritime Farmer*, Sussex, N.B., May 18th, 1915.
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- Co-operation as it Affects the Farm Home,
W. W. Thomson, *Prairie Farm & Home*, Regina, May 26th, 1915, page 2.
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- Value of Teaching Agriculture in Rural Schools,
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- The Canadian Flour Milling Industry. The present Status of the Industry,
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- Crop Prospects in Canada,
Ernest H. Godfrey, F.S.S., Census & Statistics Office, Ottawa, *The Canadian Miller & Cerealists*, Montreal, June, 1915, page 145.
- The Truth About the School Fair,
Justus Miller, *The Canadian Countryman*, Toronto, June 5th, 1915, page 7.

"The work of our School Garden Associations is being better understood. We are not making farmers. We are not interested in making gardeners. We are interested in making men. The influence of our work upon the child makes him a better man, a better citizen. That is the aim of our Association. The child that has not had an opportunity to come in daily touch with the myriad operations of Mother Earth is deprived of his own heritage."—Mr. Van Errie Kilpatrick, founder of the School Garden movement.

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR · J. B. SPENCER, B.S.A.

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The Agricultural Gazette

OF CANADA

VOL. II

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No. 7

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THE RURAL SCHOOL AND THE FARM

IT is not so important to get those who have left the land to return as to hold those upon the soil who were born in the rural communities. In the past the education given in the rural school has been too academic. Now there is an awakening. As pointed out by Professor Newton of the Manitoba Agricultural College, in this issue, vocational efficiency is the watchword of the times. This is recognized in the agricultural extension service that is being carried on in all parts of Canada.

A form of extension work that gives promise of most valuable results is that carried on through the agency of boys' and girls' school clubs. These organizations are associated with the rural school fair, which, as stated in THE AGRICULTURAL GAZETTE for March, 1914, had a beginning in Canada about 1908 but did not get well under way until three years ago. In Ontario they are called Rural School Fair Associations; in Quebec, Potato Clubs, Poultry Clubs, Corn Clubs, etc.; in Manitoba, Boys' and Girls' Clubs; in British Columbia, Junior Institutes and so on, but the aims and objects are the same by whatever name they are recognized.

In preparation for a serious contest to be held at the end of the season, the members of these juvenile organizations raise various kinds of field and garden crops, and chickens. In this issue there appears a summary of the materials that have been supplied to the children in each province with instructions for getting the best results from them. And now, on tens of thousands of farms, even in remote districts, the race is on, to be continued with all the vigour of youth until the judges decide the awards.

The results of this season's work alone cannot be easily estimated. Parents will have introduced on their farms the choicest varieties of the various crops and will learn, even from the children, many lessons of value, but it is to the children themselves that the great advantage will come. Teachers testify to the increased interest of the club pupils in the work of the class room and in school attendance. In other words thrift is being developed at an impressionable age, not by the compulsion of a forthcoming examination, but by an inspiration that will lure and hold the intelligence of the children in the things of nature which will surely save most of them to the cause of agriculture and to the welfare of the nation.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE AGRICULTURAL INSTRUCTION ACT

THE following is the form of agreement entered into by and between the Hon. Martin Burrell, Minister of Agriculture for Canada, and each of the nine provinces of the Dominion, under the provisions of THE AGRICULTURAL INSTRUCTION ACT of 1913, the appropriation to each province and the work to be undertaken by each during the fiscal year 1915-16:—

FORM OF AGREEMENT

MEMORANDUM OF AGREEMENT made and entered into by and between the Honourable

Minister of Agriculture for Canada, hereunto authorized by Order of His bearing date the day of 19

Party of the First Part;

AND

The Government of the Province of herein represented by the Honourable

for said Province, hereunto authorized by Order of His Honour The Lieutenant-Governor of said Province in Council, bearing date the day of 19 ,

Party of the Second Part,

WHEREAS, under the terms of THE AGRICULTURAL INSTRUCTION ACT, for the purpose of aiding and advancing the farming industry by instruction in agriculture, there shall be paid out of the Consolidated Revenue Fund of Canada to said Province, during the Fiscal Year ending the 31st day of March, 19 , the sum of

and

WHEREAS, it is provided in said Act that the payment of said monies shall be conditional upon agreement between the Minister of Agriculture and the Government of said Province as to the terms, conditions and purposes within the meaning of said Act, upon and for which the payment of said monies is to be made and applied.

NOW, THEREFORE, the said parties have mutually agreed that the said monies shall be paid upon the terms and conditions and shall be applied to the purposes hereinafter set forth, to wit:—

1. One-half of said monies shall be paid to said Party of the Second Part by said Party of the First Part on the execution of these presents.

2. The balance of said monies shall be paid to said Party of the Second Part by said Party of the First Part, from time to time, upon

the latter being satisfied that said monies have been and are being properly expended for the purposes for which said monies were paid, as hereinafter provided.

3. The said Party of the First Part shall have at all times the right, through such officers of his Department, or other persons as he may designate or appoint for the purpose, to inspect any work carried on through the assistance of said monies, and may withhold any further payment on account of the same if, in his opinion, the conditions of this agreement are not being fulfilled.

4. The said monies shall be expended for and applied to the following purposes, the amount to be expended for each purpose being that set opposite the same, to wit:—

5. Should it hereafter at any time be determined that any of the amounts as aforesaid for any of the foregoing purposes can with advantage be varied, then by mutual consent of the parties hereto the same shall be varied accordingly.

6. The Party of the Second Part shall render to the Party of the First Part such statement of the expenditure of said monies as may be required from time to time by the said Party of the First Part.

7. It is understood that the monies granted by this agreement are intended to supplement the amounts devoted to agriculture by the Province itself, and are in no wise to be used for the purpose of curtailing the customary provincial expenditure in aid of agriculture.

IN WITNESS WHEREOF, the said Party of the First Part has hereunto set his hand and the Seal of said Department of Agriculture, at the City of Ottawa, this day
of 19 .

AND IN WITNESS WHEREOF, the said Party of the Second Part has hereunto set his hand and the Seal of the said Province, at the City of in said
Province, this day
of 19 .

FEDERAL APPROPRIATIONS TO THE PROVINCES UNDER THE AGRICULTURAL INSTRUCTION ACT, 1915-16

PRINCE EDWARD ISLAND

Capital Account—Equipment of offices of instructors, domestic science kitchens and laboratories.	\$ 4,000 00
Director of Agricultural Instruction and Instructors.	6,475.00
Instruction and Demonstration (including Short Courses):—	
Live stock	\$2,500
Poultry	300
Bee-keeping.	100
Horticulture and Fruit growing	500
	<hr/>
	3,400.00
Women's work.	3,190.00
Agricultural Instruction in Public and High Schools.	10,050.00
Office assistance.	1,500.00
Miscellaneous and contingencies.	523.28
	<hr/>
Total.	\$29,138.28

NOVA SCOTIA

Agricultural Colleges and Agricultural Schools:—

(a) Capital expenditure to pay interest and sinking fund on cost of construction of and furnishing for science building.	\$ 7,500	
(b) Salaries and maintenance.....	20,000	
		<hr/>
		\$27,500. 00
Instructors, Directors, Superintendents and District Representatives—		
Salaries and expenses.		7,000 00
Instruction and Demonstration:—		
Dairying.	3,500	
Poultry.	1,600	
Bee-keeping	400	
Soils (including drainage and field crops).	2,300	
Horticultural and Entomological Investigation.	7,500	
Fruit growing.	1,200	
Short Courses.	3,000	
		<hr/>
		19,500. 00
Women's work (Women's Institutes, Home Makers' Clubs, Domestic Science, etc.)		3,000. 00
Bulletins, reports, circulars and miscellaneous printing.		500 00
Instruction in Public and High Schools and in Normal Schools in Agriculture, Nature Study, training of teachers and school gardens		10,000. 00
Contingencies and miscellaneous.		501 87
		<hr/>
Total.		\$68,001 87

NEW BRUNSWICK

Agricultural Schools:—

(a) Capital expenditure.....	\$10,000	
(b) Salaries and maintenance.	6,500	
		<hr/>
		\$16,500 00
Instructors, Directors, Superintendents and District Representatives—		
Salaries and expenses		18,000 00
Instruction and Demonstration:—		
(a) Bee-keeping	500	
(b) Silos and drainage.	3,000	
(c) Horticulture.	500	
(d) Short Courses.	1,000	
		<hr/>
		5,000. 00
Women's work		3,000. 00
Bulletins, reports, circulars and miscellaneous printing.		500. 00
Instruction in Public, High and Normal Schools, in Agriculture, Nature Study and Domestic Science, training of teachers and school gardens.		10,000. 00
Contingencies and miscellaneous		1,308. 40
		<hr/>
Total.		\$54,308 40

QUEBEC

Poultry.....	\$15,000 00
Arboriculture, Fruit growing.....	33,000 00
Bacon.....	12,000 00
Schools of Agriculture.....	60,000 00
Agricultural teaching in Academies, Rural Schools and Normal Schools.....	8,000 00
District Representatives, Agricultural Teachers—Agronomes.....	12,000 00
Experimental Union.....	2,000 00
Alfalfa and clover.....	4,000 00
Seed selection.....	4,500 00
Bee-keeping.....	9,000 00
Tobacco.....	3,500 00
Dairying.....	25,000 00
Drainage.....	3,000 00
Domestic Science.....	10,000 00
Maple sugar industry.....	4,000 00
Conferences, publications, etc.....	10,310 70
Total.....	\$215,310 70

ONTARIO

District Representatives.....	\$114,000 00
Agricultural College:—	
(a) Capital expenditure.....	81,413 64
(b) Salaries and expenses of additions to staff and maintenance.....	12,400 00
O. A. C. Short Courses, travelling and living expenses of winners of Acre Profit and Live Stock Competitions.....	1,500 00
To encourage Agriculture and Domestic Science in High, Public, Separate and Continuation Schools, to be available for grants and for travelling and living expenses of teachers and others in attendance at Short Courses or other educational gatherings, in addition to services, expenses and equipment, and to be paid out on the recommendation of the Department of Education.....	20,000 00
Educational work in connection with marketing farm products, including organization of co-operative societies, collection, printing and distribution of information on current prices and systems of marketing.....	6,000 00
Stock and seed judging, short courses and institute lecture work.....	6,500 00
Women's institute work, including courses in Cooking, Sewing, etc.....	2,000 00
Short Courses for fall fair and Field Crop Judges, including travelling and living expenses.....	3,000 00
Drainage work.....	6,200 00
Demonstrations and instruction in vegetable growing.....	3,000 00
Demonstration work on soils.....	2,000 00
Demonstration work in spraying, pruning and packing fruits.....	4,000 00
Work in bee-keeping.....	1,500 00
Equipment of laboratory and services of Assistant, Horticultural Experiment Station, Vineland Station.....	2,500 00
(Each appropriation to include services, expenses and equipment).	
Total.....	\$266,013 64

MANITOBA

Instructors, Directors and District Representatives (salaries and expenses) . .	\$27,000. 00
Instruction and Demonstrations (including Short Courses)	20,000. 00
Women's Work (Domestic Science)	7,000. 00
Boys' and Girls' Clubs	4,000. 00
Bulletins and miscellaneous printing	2,000. 00
Instruction in Public and High Schools	1,200. 00
Contingencies and miscellaneous	3,221. 31
Total	<u>\$64,421 31</u>

SASKATCHEWAN

College of Agriculture	\$22,800. 00
Instructors, Directors, Superintendents and District Representatives— Salaries and expenses	27,600. 00
Instruction and Demonstration in live stock, dairying, soils, crops, etc., including short courses	7,000. 00
Women's work	4,500. 00
Boys' and Girls' work	1,100. 00
Bulletins and miscellaneous printing	3,000. 00
Instruction in Public, High and Normal Schools in Agriculture, Nature Study and Domestic Science, school gardens, training of teachers	1,000. 00
Contingencies and miscellaneous	1,011. 04
Total	<u>\$68,011. 04</u>

ALBERTA

Schools of Agriculture:—	
Maintenance	\$36,000
Equipment and buildings	2,000
	<u>\$38,000 00</u>
Provincial Instructors—Salaries and expenses:—	
Dairying	4,000. 00
Instruction and Demonstration:—	
Demonstration farms	3,200
Demonstration trains	5,000
Dairying	3,000
	<u>11,200. 00</u>
Women's work	1,500. 00
Bulletins and publications	1,800. 00
Miscellaneous	28. 82
Total	<u>\$56,528. 82</u>

BRITISH COLUMBIA

Appointment of Inspectors, Instructors, Directors, Superintendents, and District Representatives—Salaries and expenses.....	\$10,000.00
Farm demonstration and experimental work, field crop competitions, cow testing associations, poultry demonstration stations, co-operative variety tests.....	18,000.00
Horticultural demonstration stations, experimental work in vegetable growing, and greenhouse work, pathological and entomological investigation work, demonstration and experimental work in various cultural practices in fruits and vegetables.....	8,500.00
Boys' and Girls' field crop competitions, fairs, etc.....	2,000.00
Bulletins, reports, circulars and miscellaneous printing.....	2,000.00
Department of Education, towards agricultural instruction in Public, Normal and High Schools.....	15,000.00
Contingencies and miscellaneous, not included in above items.....	2,765.94
Total.....	\$58,265.94

STATEMENT OF FEDERAL APPROPRIATIONS TO THE PROVINCES UNDER THE AGRICULTURAL INSTRUCTION ACT, 1913-14, 1914-15 AND 1915-16

	1913-14	1914-15	1915-16
Prince Edward Island.....	\$26,529.85	\$27,832.81	\$29,138.28
Nova Scotia.....	54,288.45	61,144.45	68,001.87
New Brunswick.....	44,509.93	49,407.20	54,308.40
Quebec.....	159,482.40	187,409.16	215,310.70
Ontario.....	195,733.32	230,868.83	266,013.64
Manitoba.....	51,730.05	58,075.45	64,421.31
Saskatchewan.....	54,296.29	61,152.31	68,011.04
Alberta.....	46,094.95	51,310.41	56,528.82
British Columbia.....	47,334.76	52,799.38	58,265.94
Veterinary Colleges.....	20,000.00	20,000.00	20,000.00
Total.....	\$700,000.00	\$800,000.00	\$900,000.00

"A new nation, whose manners, without going through the slow process of civilization, takes pattern from the already refined ways of Europe, stands in need of the teachings of the grand school of nature, for agriculture is the basis on which all States are founded. It is, I admit with the economics, agriculture that forms the chief wealth of the social state, that teaches respect for property, and warns us that we are blind to our own interests whenever we interfere with those of other people; it is agriculture that clearly points out to us the indispensable correlation existing between the duties and the rights of men; by binding the tiller of the soil to his field, it binds men to their country. The first attempts at agriculture teach us the necessity of the division of labour, that marvellous source of all manifestations of public and private prosperity; agriculture goes deeply enough into the hearts and interests of men to induce them to see in a numerous family so much additional wealth; while, by teaching resignation, it subjects our intellect to the supreme and universal rules that regulate the world. From all this, I infer that agriculture alone can put a stop to revolutions, because it is the only pursuit that usefully employs all the capabilities of men, that imparts to them calmness and moderation without indifference, that inculcates respect for that experience that enables men to control the results of their new experiments; which, in short, furnishes constant proofs of the grand results to be obtained by simple regular work, and which neither hurries nor delays in anything."—*Comment of Prince de Talleyrand on agriculture while travelling in the United States in 1794. Memoirs of Prince de Talleyrand.*

THE LIVE STOCK BRANCH

A NEW MARKETS POLICY

A comprehensive markets propaganda is being undertaken by the Live Stock Branch. An explanation respecting the details of the policy follows:—

1. The Organization of an Intelligence System which shall provide for—

(a) Statistics of Animal Population and of Production.

Co-operation with the Census Branch of the Department of Trade and Commerce, and with the Provincial Departments of Agriculture in the collection and analysis of statistics of animal population. Gathering current data as to the exact situation in the country respecting breeding and feeding operations, the supply of feed, the condition of stock, when heavy marketing may be expected, the districts from which the largest supplies may be available and the districts in which a shortage exists.

(b) Information regarding the Home Market.

The collection of definite and reliable information regarding market demand in the several provinces of the Dominion, with particular reference to current prices in the leading market centres and to conditions governing interprovincial trade in meats and other live stock products.

(c) Information regarding the Foreign Market.

Through agents of the Branch, through the foreign service of the Department of Trade and Commerce and from such other sources as are available, the gathering of adequate statistics and data to make possible an

intelligent interpretation of trade conditions in foreign countries, exporting and importing, with the view of assisting our live stock interests to develop foreign trade, to adjust their operations to the requirement of foreign demand and to take advantage of such outlets as may, from time to time, appear for the profitable sale of live stock products.

(d) Distributing Information to the Producers.

The dissemination of this information to the producers in such an effective way that they may be able intelligently to anticipate market demands, to seize opportune periods for the profitable disposal of their stock, to adjust successfully their operations to the trade situation as developed by local and foreign requirements and to equalize production in the several provinces, thus providing against the alternate gluts and shortages which have in the past invariably tended to upset trade balances and defeat the expectations of the breeders.

2. The Organization of Farmers for Co-operative Action in the Sale of—

(a) Their Eggs and Poultry.

The successful demonstration given in Prince Edward Island, of the co-operative sale of eggs suggests the need and wisdom of extending the system now in operation to all the provinces of Canada and of its further elaboration as required by varying local conditions and in the development of interprovincial and foreign trade.

(b) Their Wool.

The policy to be pursued in this work must closely adhere to the principles followed during the past year, but it is hoped that means may be devised which shall secure to the growers the commercial advantages of deferred sale when the market warrants the holding of the product.

*(c) Their Lambs, Hogs and Cattle.

It is proposed to initiate the co-operative sale of live stock in accordance with the principles followed in the work already undertaken.

3. The Promotion of Sale by Grade and Payment according to Quality.

It is widely recognized that the sale of produce on a flat rate basis, for example in the case of hogs, invariably inflicts a penalty on the progressive farmer and in effect provides a premium for low grade goods. Evidence is not wanting that a well directed effort by the Department would favourably influence buyers and merchants toward an acceptance of standards and the rating of prices on a basis of market merit. It is the experience of the Branch that a movement in this direction is fundamental to any advance which may be made in improving quality and in increasing production.

4. The Co-operation of all Interests in the Development of our Live Stock Trade.

Under a Markets Policy, the Department may usefully endeavour to have itself recognized as a medium for the adjustment of differences between the producer, on the one hand, and the packing, transportation and financial interests, on the other, and an organization through which co-operation may be effected by these great industrial bodies in building up Canada's agricultural trade.

The Markets Policy of the Live Stock Branch, operated in accordance with the foregoing outline, will be administered under the immediate direction of Mr. H. S. Arkell, Assistant Live Stock Commissioner. The present organization of the Branch will be made use of to the fullest extent, the work being carried on through the Chiefs of the several divisions, the cattle, sheep and swine, and poultry propaganda falling to the charge respectively of Mr. R. S. Hamer, Mr. T. R. Arkell and Mr. W. A. Brown.

*It should be made clear that in the prosecution of this programme it is not expected or intended to involve the Department in any commercial obligation, the farmers' associations, as a matter of deliberate policy, assuming full and complete responsibility in the transaction of their own business and, ultimately, in the executive administration of their own organization.

ASSISTANCE TO WOOL GROWERS

THE Live Stock Branch is again assisting wool growers this year in the preparation and classification of their wool for market. Grading is being performed for sheepraisers' associations in every province but one, and in two of the western and one of the eastern provinces, organizations have been formed and applications for grading received therefrom, to include the

greater portion of the wool grown there. It is estimated that probably 2,000,000 pounds of wool will be prepared under the supervision of the Branch. The great increase of applications over last year tends to show the keen interest which farmers are now taking in Canada in the development upon a higher plane of the sheep and wool industry.

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF ANIMAL HUSBANDRY

SOFT CHEESES

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

FOR a number of years previous to 1911 the milk produced on the Central Experimental Farm was manufactured into butter only, and the skim milk fed to calves or pigs. The disposal of the milk in this way during the ten years previous to that date, netted an average price of about \$1.65 per hundred-weight of milk, allowing 20 cents per hundredweight for the value of skim milk. However, at this time it was deemed advisable by Mr. J. H. Grisdale, then Dominion Agriculturist, now Director Experimental Farms, to start some experimental work in the manufacture of soft cheeses, not only to introduce this subject in Canada, but also to use the largely increased milk production on this farm. The introduction of this work has had a very large influence. Many individual farmers, supplying creameries and cheese factories during part of the season, are now utilizing their milk for home cheese production during certain parts of the year when the factories are not in operation.

VARIETIES OF CHEESES

Quite a large variety of soft cheeses have been tried in this work. However, the two most marketable varieties which have been continued during the past four years are the Coulommier cheese and the Cream cheese. In addition to these soft cheeses considerable work has been done in the manufacturing of ten-pound Cheddar cheeses and other varieties of a similar kind. This work will be largely extended when

better facilities are at hand in a new dairy building which is anticipated.

ECONOMY TO MANUFACTURE

The cost of equipment for the manufacturing of either cream cheese or Coulommier cheese, is very limited. The equipment necessary for the production of cream cheese consists of a pail, ladle, huckaback towelling for straining, a small mould and press, salt, rennet, and a good dairy thermometer.

For marketing this cheese, it is wrapped in cheese cloth, then in good cream cheese parchment, and placed in a pasteboard carton.

The equipment for manufacturing the Coulommier cheese consists of a pail, ladle, drainage boards, a few sets of cheap, circular, double rings, salt, thermometer and rennet. For marketing this cheese, parchment paper and cartons are necessary.

Both of these cheeses are very popular in any of our city markets where tried, and no difficulty whatever is encountered in readily establishing a good market for the full capacity of our dairies.

METHOD OF MANUFACTURING

Space will not permit the details of the manufacturing of these cheeses; however, those interested are referred to the Annual Report of the Experimental Farms for 1911, and also to Exhibition Circulars Nos. 22 and 23, for such information.

It is sufficient to say that the cream cheese is manufactured from a thin cream, two gallons of which,

testing 16 per cent butter fat, will make 20 to 21 ounce cheeses.

The Coulommier cheese is a whole-milk cheese. One hundred pounds of whole milk testing about 4 per cent butter fat, together with the necessary rennet and salt, will produce 20 Coulommier cheeses, weighing approximately 16 ounces each.

MARKETING CHEESE

The cream cheese is exceedingly popular in the Eastern city markets and sells readily at 11 cents wholesale or 15 cents retail. The Coulommier cheese, which is a short-cured cheese, is not so popular amongst native Canadians, but Canadians of European extraction prefer

this to other cheese manufactured. The Coulommier cheese also sells quite readily at 11 cents wholesale and 15 cents each retail. There is no difficulty whatever in getting local merchants to handle large quantities of this at the wholesale prices.

During the fiscal year ending March 31st, 1915, there have been manufactured at the Central Experimental Farm dairy, an average of nearly 250 soft cheeses per week, composed of an average of about 220 cream cheeses and 30 Coulommier cheeses. This makes a total of over 11,000 cream cheeses per annum and over 1,500 Coulommier cheeses per annum. At no time was the demand for these cheeses fully satisfied.

THE DIVISION OF HORTICULTURE

FURTHER EXPERIMENTS WITH FIRE POTS IN PREVENTING FROST

BY M. B. DAVIS, B.S.A., ASSISTANT IN POMOLOGY

AT the Central Experimental Farm this spring, several different makes of orchard heaters or fire pots were tested out. At present (June 7), it is impossible to give exact data regarding the merits of these heaters, as they are still in use, so that the amount of oil still unburned cannot be accurately determined.

The heaters were divided into plots of the same size, and each make was charged up with all oil placed in them and a strict account of the number of hours each type burned was also kept. At the end of the season the amount of oil remaining in each type of heater will be credited back, and in this way the fuel consumption of the different makes can be determined.

Spring frosts were quite prevalent during May, and one or two nights were exceptionally severe, thus giving an excellent opportunity to test

the value of orchard heaters for different crops.

The heaters were tried on European grapes, apple trees, strawberries, and tomatoes with varying success.

PROTECTING EUROPEAN GRAPES

Heretofore the European grapes have been kept covered with their winter protection until after the middle of May; this spring, however, this vineyard was uncovered about May first and orchard heaters were placed through the vineyard to protect against frosts.

These heaters were lighted on several different occasions, on one of which the frost was exceptionally severe. The vines at the time of writing are well advanced and show no signs of frost injury, while on the night of May 27th, when four degrees of frost was recorded, clover just

outside the vineyard was killed. Heaters were used at the rate of one hundred and twenty-five per acre. As European grapes are known to be very tender, this seems to be conclusive evidence in favour of the orchard heaters, although it is unfortunate that there was no check plot to leave unheated.

STRAWBERRIES

In the strawberry patch, the heaters were used at the rate of one hundred and ten to the acre, and although the success here was not as great as in the vineyard, quite satisfactory results were obtained.



THE "COMPETITION" HEATER

From our experiments this spring it seems that for strawberries a much larger number of heaters is required, unless some means can be devised for controlling the air currents to prevent the heat rising. There seems to be little difficulty in raising the temperature a foot or so above the ground, but to actually raise the ground temperature on a severe night is a difficult problem. For instance, in one plot which was heated and which was in a very

cold location, the temperature at three feet from the ground was kept between thirty-two and thirty-nine degrees, while on the ground it seemed impossible to keep it above twenty-six degrees, which was the same as the outside area. In the other plots on the same night, both the ground and three foot temperatures were kept three degrees higher. As strawberry plants are right on the ground it will be readily understood how difficult it is to protect these from frost.

On the 28th of May, after the severe frost of the 27th, the strawberry bloom inside and outside of the heated area was closely examined and all injured blossoms counted. The same variety was used for comparison, and the results of the count showed an advantage in favour of the heated area as follows:

	Heated Area	Unheated Area
Per cent bloom injured	30.3	60.2

This shows a difference of thirty per cent in favour of the heated area, or in other words the heated area had just one half as much injury as the unheated area. It might also be noted that the unheated area was in a more sheltered position than the heated area, the temperatures recorded there always being one or two degrees higher than the temperatures recorded in the heated area at the time of lighting.

TOMATOES

Tomato plants were brought through the night of May the 27th with some slight injury. Wherever the drooping leaves touched the ground they were nipped with frost, but upright plants came through uninjured. There was considerable injury, however, from plants being near the heaters, as it is impossible where the plants are only four feet apart to get them any farther than two feet from a heater, and, if the plants are tall, this means that the

top leaves are going to be singed with heat. Whether or not this injury will be sufficiently severe to permanently injure the plants remains to be seen, but just now they appear to be doing fairly well.

Tomato plants outside the heated area were over fifty per cent killed. As these will all be allowed to grow and ripen fruit, more data on this question will be obtained later.

It is thought that had a better grade of oil been used among the tomatoes no injury would have resulted from frost. While the attendants were at another part of the farm, several heaters boiled over and became extinguished, thus lowering the ground temperature for a few minutes to thirty degrees, but immediately upon relighting, this was raised again to thirty-four degrees.

In connection with this it may be mentioned that it was impossible to get the grade of oil required on this night, as the particular oil company stocking that brand was sold out. All other pots were filled with the better grade, and it was not until after this experience that it was

found out that there were two grades of oil on the place.

The oil is a heavy thick oil which burns without boiling over and which gets thicker as it burns down; the other, although apparently the same oil at the beginning, begins to get thin and boil over the longer it burns. This latter grade evidently contains a large percentage of water and is not fit for use in these orchard heaters.

An attempt to obtain exact data on these grades of oil will be made so as to be in a position to recommend to orchardists the proper kind of fuel oil to ask for.

USE OF SAP BUCKETS AS HEATERS

An ordinary sap bucket, such as is used for gathering maple sap, was tried out as an orchard heater with fairly satisfactory results. It was found necessary to apply a damper to the center of the large opening to control fuel consumption. Otherwise the heater, although a little extravagant in the use of fuel will serve very well in cases of emergency.

THE DIVISION OF BOTANY

MOVEMENT FOR THE IMPROVEMENT OF THE POTATO INDUSTRY

BY H. T. GÜSSOW, DOMINION BOTANIST

THE Hon. Minister of Agriculture has appointed Mr. G. C. Cunningham, B.S.A., and Mr. Paul A. Murphy, B.A., to assist the farmers of the Maritime Provinces in combating the diseases which attack their crops, particularly the potato crop.

Mr. Cunningham is well known among plant pathologists through his work on potato scab and club-root (finger-and-toe) of cabbages, turnips and other crucifers. He was raised near Guelph, Ontario, and received his college training at the Ontario Agricultural College and at

the University of Wisconsin. For the last five years he has been Associate Plant Pathologist at the Vermont Agricultural Experiment Station, where he worked on diseases of potatoes and other crops. During the year 1911-1912, he had charge of the departments of Plant Pathology and Bacteriology at the University of Vermont.

Mr. Murphy received his training in Dublin University and the Royal College of Science for Ireland, and he has had three years' experience in the investigations carried out on the diseases of potatoes by the Irish

Department of Agriculture, by whom he was employed. He was then awarded a travelling scholarship by the English Board of Agriculture to continue his studies along the same lines, and he has spent the last three years extending his knowledge of the subject in England, Germany and the United States.

The primary object is to help the farmers to produce larger crops of A. No. 1 seed potatoes, and to ensure for that seed the place in the market which its high quality deserves. Produce which is marketed under a guarantee of freedom from disease and purity is bound to obtain a higher price than could be otherwise secured. The Minister believes that such a course, if followed regularly for a few years, will give seed potatoes from these provinces an enviable position of superiority among buyers, and this is certain to increase the returns of the growers.

It is proposed to make an examination of the potato fields, first during the growing season and then at the time of harvest, to detect the presence of all diseases which depreciate the value of the crop by lowering the yield and reducing the price.

Those who wish to have the services of these men for any special purpose during the current season are asked to send a request to G. C. Cunningham, care of Experimental Station, Fredericton, N.B., for the provinces of New Brunswick, Nova Scotia and Quebec, and to Paul A. Murphy, Experimental Station, Charlottetown, for Prince Edward Island. These pathologists will be entirely at the service of the farmers of their respective provinces in assisting them to improve all their crops, as well as the potato, in yield and quality, and all inquiries concerning diseases will be gladly answered.

THE TOBACCO DIVISION

CHOICE OF VARIETIES AND TOPPING

BY F. CHARLAN, CHIEF

CANADIAN growers should endeavour to specialize in those varieties which are best adapted to the soil and climatic conditions of their districts. To find these varieties is one of the most pressing problems of the tobacco-growing industry.

In spite of recent difficulties between growers and manufacturers, an increasing quantity of domestic tobacco is being used every year. There has been no decrease in the demand for Ontario Burleys, and the flue-cured tobaccos, of the Virginian type, which are now being cultivated in South Essex, find a ready sale.

In Quebec, new markets have been found for certain varieties, such as the Comstock Spanish. There is now a demand for tobaccos of more

aromatic varieties, suitable for use as "fillers". There is also a demand for bright leaves, of the lightest possible texture, intended for light pipe tobaccos, or even for cigarette mixtures.

Complaints are made occasionally that the quality of Canadian tobacco is not always as good as it should be. Outside of negligence, possibly poor handling and unfavourable conditions of temperature, which may, in so many ways, injure the quality of a crop, are there not other factors to which the grower has not, up to the present, attached sufficient importance?

One of these unrecognized factors is, we believe, the use of unsuitable varieties. Not only should the choice of the variety be based upon the nature of the soil and climatic

conditions, but the methods of culture should vary with each variety according to the object sought, if the best results are to be obtained.

IN ONTARIO

In Ontario, fine and light coloured sandy soils, rather poor in vegetable matter, which, at certain points, form the border of Lake Erie, seem to be used more and more for the growing of flue-cured Virginian tobacco. This strain is also grown on some uplands that are found in the neighbourhood of Ruthven and Leamington. Coarser sands should be used exclusively for white Burley. The tobacco grown on such soils has generally a looser, more porous texture. It is suitable for manufacture into plugs, owing to a readiness to absorb juices. Good crops of seed leaves are obtained on heavier lands, containing a rather high percentage of clay, but the texture of these soils is, to a certain extent, modified by the presence of lime, which is found in rather large quantities in all the soils of Southern Ontario. In some parts seed leaves have been abandoned for strong tobaccos, fire cured (Green River Types). The latter are generally grown under contract for a stated length of time.

In Eastern Ontario, there are some large areas made up of fine, fertile and light-coloured sand, on which a White Burley with a finer, lighter and more elastic texture than the Burleys of Essex and Kent could be obtained. The results of the small number of trials made in this direction by the growers of the district have been most encouraging.

Before long, perhaps, Canadian manufacturers will come to Eastern Ontario (between Toronto and Ottawa), for their supply of light Burleys, for the manufacture of a number of pipe tobaccos and even of cigarettes. This territory of Eastern Ontario, also seems to be particularly well adapted for the growing of

large Seed Leaves which, although comparatively late, will have sufficient time to ripen before the early frosts and to cure before winter sets in. It should even be possible to obtain leaves with a finer and more elastic texture than in Southern Ontario, as the land does not appear to contain as much lime as in the latter district.

IN QUEBEC

In Quebec, it seems that the growing of tobacco should not be encouraged too far east, or too far north of Montreal. The greatest variety of soils is perhaps found in the centers on the north shore of the St. Lawrence—from the heavy and gravelly lands where Canelle is grown to the almost pure sands of Joliette, which are suited to the growing of Connecticut Seed Leaves. During the last few years, the Comstock variety has been grown on light loams, but this variety, after having enjoyed popularity for ten years or so, is now largely replaced by pipe tobaccos, of a larger size, for which the fineness of texture is not a consideration of first importance. Very likely, on account of the great demand, the growing of the Comstock was extended to heavy soils when it could not acquire sufficient size or fineness. Such soils are better suited for the growing of plug tobacco, such as Blue Pryor, and General Grant, which, unfortunately, ripen rather slowly.

The Tobacco Division is now endeavouring to introduce in the province of Quebec, a good type of "fillers" tobacco, sufficiently productive to be profitable at 15 cents per pound, and with sufficient aroma. Some interest has been shown in the Aurora. Requests have also been received regarding the Zimmer Spanish and the Pennsylvania Broad Leaf. Apparently the manufacturers having made up their minds to accept Canadian binders, are now looking for "fillers"

of the same source. The Quebec Cuban grown varieties have a pleasant aroma, but they are not sufficiently productive. The Brazilian strains never gave satisfactory results. We must therefore confine ourselves to some strains of the Ohio and to the Comstock Spanish.

For the supply of binders, the manufacturers can rely upon the district to the south of Montreal. But there are marked differences in the nature of the soils in this part of Canada and not all the growers can produce binders of good quality.

The choice of a variety, especially in Quebec, should not be governed by the demand of the time, but also by the nature of the soil of the parts of the farm where tobacco is to be grown. If a rotation is followed—and it has been repeatedly demonstrated that it is the only way to keep up the fertility of the soil—the growers will naturally be compelled, at times, to grow a tobacco for binders on light and deep loams with permeable sub-soils, or pipe tobacco on gray soils, rather heavy, sometimes even “fillers” tobacco if the season is not long enough in the district for the ripening of the large Seed Leafs, or of the Blue Pryor, or, again some Canadian tobacco; such as Tabac Rouge, Petit Havana, etc. The latter varieties are very profitable when planted close enough (2 feet x 1 foot) to give a good yield in weight. Under such conditions, most of the work has to be done by hand, therefore such varieties must necessarily be grown on a small scale, unless the grower has a numerous family.

But with any variety, an endeavour should be made to avoid the production of undersized tobacco. By undersized, is meant the leaves that have not had time to become large enough before harvesting to be used for manufacturing purposes. In most cases, not only are these tobaccos too small, but they are not ripe enough and do not cure properly.

With small varieties, such as Canelle, Tabac Rouge, Petit Havana, etc., no hesitation is possible. The number of leaves that should be left on each plant is rather limited, from six to eight. Topping should be done as soon as the flower cluster can be easily distinguished. There is no danger at this time of injuring the top leaf, and this leaf may become almost as large as the medium leaves.

TOPPING COMSTOCK

With the Comstock it is not quite so easy to ascertain, at topping time, the exact number of leaves that should be left on the plant. It is impossible to foresee the character of the season, whether it will be wet or dry, etc. In the latter case, if topping is done too low, that is to say, if the number of leaves remaining on the plant are too small, the product might be too thick. When the tobacco is intended for binders, topping should be done early, as soon as from thirteen to fourteen leaves can be counted on the plant after removing the terminal bud and the bottom leaves, the latter at a height from three to four inches from the soil up. In an average season, it is very seldom that fourteen leaves can be left on a plant of Comstock Spanish. Only the strongest and earliest plants can bear that number.

Ten days or two weeks after this preliminary topping, the work may be completed by reducing the number of the leaves to twelve or even less, according to the growth the plant has made in the interval. Then the plant is left to itself; except for the suckers which should be removed as they appear. In hot and comparatively dry weather, the sooner topping is done, the quicker the plant will ripen. For binders, the crop should be harvested before ripening is very advanced. Topping may be considered as satisfactory: (1) if the top leaf is fourteen inches

long or longer; (2) if this leaf is carried almost horizontally (any leaf carried vertically at the top of the plant should have been removed when topping).

In wet weather, after the last topping, the plants will start to grow and perhaps the leaves will become too large or too thick. In this case the only thing to do is to let the head suckers grow and remove them when the danger is past, or when it is judged that it is time to let the leaves ripen. In this case, the products will not be quite so elastic, but neither will they be so thick. If we were asked to state the limit of time at which topping should be done, for the Comstock, we would say the middle of July for early crops, and the beginning of August for later crops.

In the large pipe tobaccos, it is still more urgent to top early. Generally speaking, these are late varieties, and, as the ripening is greatly influenced by the date of topping, the sooner the latter is done, the sooner these strains may be harvested and protected from the frost. On the other hand, with such varieties, a large leaf is wanted more or less fine according to the uses to which it is put and according to the variety. Therefore, the manufacturing strains such as Blue Pryor, General Grant, etc., should be topped fairly low, leaving from ten

to twelve leaves according to the strength of the plant. The Connecticut seed leaves should be topped a little higher, but as much as possible at the end of July. In this way short leaves are avoided, and, a fact which is still more important, a better yield in weight is obtained, as with an equal number of leaves or even with a somewhat smaller number, the yield is always higher when topping is done early.

An exception might be made for some special tobacco, suitable for use as fillers as well as binders. This includes some varieties of Cuban with a long stem, and the leaves of which do not vary so much in size according to the position which they occupy on the stalk. In order to secure light tobaccos, topping should be done as late as possible and all the leaves which are not expected to be twelve inches long at harvest time should be removed.

Early topping is essential in the growing of Virginian tobacco. Only a comparatively small number of leaves are left on the plant and an effort should be made to have them all ripen at the same time, so as to obtain an uniform colour. As to the White Burleys, early topping is also necessary in order to hasten ripening and to reduce the rather large proportion of short, dark and thick leaves, which are complained of by the dealers.

EXPERIMENTAL FARM, BRANDON, MANITOBA

STEER FEEDING EXPERIMENT

AN experiment of exceptional interest in fattening steers has recently been completed at the Experimental Farm, Brandon, Man. Two carloads of steers were purchased last fall in the Winnipeg stock yards at 6 cents per pound. Expenses and shrinkage brought the price of the cattle up to \$6.46½ per cwt. on November 13th, 1914, the

day the experiment started. It was continued until May 24th, 1915, or for 191 days. The steers were divided into four lots as nearly equal in weight and quality as possible. Two lots were housed in box stalls and two were wintered outside, with an open shed for shelter. One of the inside lots had straw and corn ensilage as their coarse fodder; the

other had, at first, green oat hay and, later on, mixed grass hay. One of the outside lots had alfalfa as coarse fodder, and the other green oat and mixed hay, the same as the second inside lot. All four were given the same grain ration. Starting on two pounds per day of chopped oats, the ration was gradually increased to eight pounds per day, at which rate it remained the greater part of the winter. In finishing, corn, barley and oats formed the grain ration, which was gradually increased to fourteen pounds per day.

Following are the rates at which

the feed was charged up to the steers:

Oats.....	\$.60	per bus.
Barley.....	.70	" "
Corn.....	.86	" "
Hay (green oat).....	10.00	" ton
Hay (mixed grasses).....	10.00	" "
Hay (alfalfa).....	12.00	" "
Oat and barley straw....	2.00	" "
Corn ensilage.....	3.00	" "

INSIDE AND OUTSIDE

As one of the lots wintered in the stable was fed exactly the same as one of the lots wintered outside, we have a direct comparison between the two methods. Following are a few of the figures obtained:

	Lot 1, Inside	Lot 2, Outside
First weight average, November 13th, 1914.....	896.8 lb.	897.4 lb.
Finished weight average, May 24th, 1915.....	1,258.8 "	1,211.5 "
Average gain in 191 days.....	362. "	314.1 "
Average gain per day.....	1.89 "	1.64 "
Average cost per steer at \$6.46½ per cwt.....	\$57.98	\$58.02
Average cost of feed per steer.....	39.04	39.04
Total average cost per steer.....	97.02	97.06
Average selling price at \$8.75 per cwt. with 5 per cent shrinkage.....	104.64	100.70
Average profit (labour and value of manure not counted).....	7.62	3.64
Average cost of 100 lb. gain.....	10.06	12.43

The foregoing would indicate that the most profitable method of treating cattle was to provide them with warm shelter. Straw and ensilage can be grown more cheaply than hay. If, by mixing it with corn ensilage, which can be grown in greater bulk per acre than any other fodder, as good results in feeding can be ob-

tained as from hay, beef production would be cheapened and the desirability of growing corn would be increased.

STRAW AND ENSILAGE VS. HAY

The two lots fed in the stable were used to test the latter proposition with the following result:

	Lot 1, Hay	Lot 2, Straw and Ensilage
First weight average, November 13, 1914.....	896.8 lb.	900.5 lb.
Finished weight average, May 24th, 1915.....	1,258.8 "	1,220. "
Average gain in 191 days.....	362. "	319.5 "
Average gain per day.....	1.9 "	1.67 "
Average cost per steer at \$6.46½ per cwt.....	\$57.98	\$58.22
Average cost of feed.....	37.04	35.31
Total average cost per steer.....	97.02	93.53
Average selling price per steer at \$8.75 per cwt. with 5 per cent shrinkage.....	104.64	101.41
Average profit per steer (labour and value of manure not counted).....	7.62	7.88
Average cost of 100 lb. gain.....	10.06	11.05

It will be noticed that the steers on straw and ensilage did not make quite as good gains as those on hay. But the cheapness of the feed made the profit per steer greater.

HAY VS. ALFALFA

The two lots that were fed out of doors were used to test ordinary kinds of hay and alfalfa. Lot No. 3 received green oat hay for part of

the time and a mixture of timothy and western rye grass the rest of the period. Lot No. 4 received alfalfa

as their only coarse fodder. The results follow:

	Lot 3, Hay	Lot 4, Alfalfa
First weight average, November 13th, 1914.	897.4 lb.	890.6 lb.
Finished weight average, May 24th, 1915.	1,211.5 "	1,219.5 "
Average gain in 191 days.	314.1 "	328.9 "
Average gain per day.	1.64 "	1.72 "
Average cost per steer at \$6.46½ per cwt.	\$58.02	\$58.58
Average cost of feed.	39.04	39.73
Total average cost per steer.	97.06	97.31
Average selling price at \$8.75 per cwt. with 5 per cent shrinkage.	100.70	101.37
Average profit per steer (labour and value of manure not counted).	3.64	4.06
Average cost of 100 lb. gain.	12.43	12.08

It will be observed that the alfalfa-fed steers required a smaller daily feed. They gained a little more in weight and made slightly

better profit, even though the alfalfa was charged to them at a higher rate per ton. Alfalfa therefore gave the best results.

STEER FEEDING EXPERIMENT AT LACOMBE, ALBERTA

LAST autumn fifty steers were divided into three groups at Lacombe, Alta., Experimental Station for the purpose of experiments in feeding. One group of twenty was fed in the open with a limited amount of brush for shelter and were watered through a hole in the ice. A second group of twenty were fed in the shelter of a seven-foot board-fenced corral and were watered twice daily at a tank outside. A heater kept this tank free from ice. A third group of ten were fed in box stalls, where water was always obtainable. Salt was supplied regularly. In order to obtain information as to the relative values of different bulky fodders for beef production ten other steers were fed in the barn, six on green sheaves, two on timothy and two on ensilage and straw. The cattle were put on feed November 25th and sold March 3rd. Grain feeding commenced January 1st, the ration being comprised of one part of oats and two parts barley, ground and fed in the beginning at the rate of three pounds per head per day. This ration was gradually increased to eight pounds per head per day and

because of the high price of feed was not increased any further.

One of the conclusions reached is that the erection of buildings of any substance for cattle in Alberta is a waste, all that is necessary being a tight board fence about the corral. The cattle fed in the open were ready to drink at the appointed times, and the thick undercoat of hair developed proved sufficient safeguard against the weather. The animals inside were inclined to sweat and become itchy and did not present the same comfortable appearance as the cattle in a well-bedded corral outside.

PRICES OF FODDER

In making the comparisons given in the following table the values attached to the various fodders were:—

Prairie hay.....	\$ 5.00	per ton
Timothy hay.....	10.00	"
Green sheaves.....	10.00	"
Barley.....	.56	per bushel.
Oats.....	.46	"

There was the slightest variation in the dressed weight of the different groups, the average for the sixty head being 59.99 per cent of car weights.

RESULTS IN DETAIL.

	Group 1. Green Feed Inside	Group 2. Timothy Hay Inside	Group 3. Ensilage and Hay Inside	Group 4. Prairie Hay Inside	Group 5. In Corral Outside	Group 6. In Brush Outside
Number of steers in lot	6	2	2	10	20	20
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
First weight, November 25, 1914.....	7,100	2,370	2,475	11,700	28,278	23,625
First average weight	1,183	1,185	1,237	1,170	1,162	1,181
Finished weight	7,980	2,540	2,680	12,690	27,430	26,590
Finished average weight	1,330	1,270	1,340	1,269	1,371	1,329
Total gain in ninety-seven days	880	170	205	990	4,152	2,965
Average daily gain, per steer	1 47	85	1 025	.99	2 07	1 48
Amount of meal eaten	25 98	866	8 66	4,060	8,660	8,660
Amount of hay eaten		38 40	80 15	29,030	58,450	66,290
Amount of green feed eaten	9,328					
Amount of straw eaten			3,765			
Gross cost of feed	\$77 04	\$29 33	\$25 91	\$120 07	\$247 44	\$267 04
Average cost of feed, per steer	12 84	14 66	12 95	12 00	12 37	13 35
Cost of cattle	437 83	146 15	152 62	721 50	1,435 64	1,456 87
Average value of steers at start	72 97	73 07	76 31	72 15	71 77	72 84
Cost of 100 lb. gain	8 75	17 25	12 98	12 12	5 95	9 00
Return from cattle at \$7.10 less 5 per cent. shrinkage, less $\frac{1}{2}$ of 1 per cent insurance	535 57	170 48	179 87	851 67	1,840 91	1,784 54
Average selling price per steer	89 26	85 24	89 93	85 15	92 05	89 23
Average income in value	16 29	12 17	13 62	13 01	20 28	16 38
Profit on group	20 70	5 00	1 34	10 10	157 99	60 63
Profit per head	3 45	2 50	62	1 01	7 90	3 03

THE FRUIT BRANCH

THE UNITED STATES FRUIT CROP

IN the last Fruit Crop Report, published by this Branch on June 1, there was no report given of conditions in the United States. This omission was due to the fact that very little information had reached us from any of the States when that Report was issued. Since that time several reports have come to hand, a summary of which follows:—

In the large fruit-producing sections of the Northwestern States, production will fall below 1914, in spite of the fact that a large number of young orchards will bear their first commercial crop this season. Even in sections where yields were small in 1914, such as the Rogue River Valley, there will not be an increased production. In Wenatchee and Yakima, where there was a light crop of Jonathans last year, that variety is again short. As a conservative estimate, the crop in the Northwest States may be placed at

not more than 70 per cent of that of 1914.

In Michigan all varieties of early apples will bear a good crop, with fall and winter varieties variable, and Baldwins short. There are excellent prospects for cherries and peaches, but a poor showing for pears. Grapes and strawberries have been seriously injured by frost.

A good crop of peaches is also reported in Southern Missouri, New Jersey, Delaware and New York, with a normal crop in Georgia. The crop in Texas is about 50 per cent of normal.

The apple crop in New York State promises to be good, with a heavy yield of Greenings and a shortage of Baldwins. Early and fall varieties blossomed heavier than later sorts. The total crop will be less than last year on account of the shortage of Baldwins, which is the principal variety grown in the State.

PROSPECTS FOR MARKETING FRUIT

ALREADY Canadian fruit growers are becoming anxious as to the likelihood of disposing of their crops this year at satisfactory prices. There will be a fair crop of practically all varieties of fruit, and the growers are apparently keeping in mind the panic which followed the outbreak of war last summer, when shipping facilities to the Old Country markets were temporarily demoralized, and when a considerable quantity of Canadian fruit was allowed to go to waste. This was largely due to the fact that many itinerant apple buyers were not operating. Consequently, growers who in previous years had been dependent upon these men to handle their fruit found themselves left with a crop of apples on their trees, with no knowledge of marketing and with no established trade connections. At all events the season was not a satisfactory one.

To predict now what is likely to be the market situation next autumn is impossible; at the present time there is reason to hope that a much more satisfactory state of affairs will prevail than in 1914. In the first place the panic is over; all classes have had time to reflect upon the general situation and upon their own positions. Reflection has resulted in, or been followed by,

optimism, and the Canadian public, outwardly at all events, is less perturbed now than it was last fall.

In the second place, our large consuming markets in the West promise to be as large and important a factor as ever in disposing of the fruit crop. Conditions there depend largely upon the grain crop, which is reported good in all districts. Money should circulate freely and consumers should buy readily.

Thirdly, the labouring classes in Great Britain have secured employment at better wages than they ever received, and the buying power which was reduced last year through unemployment and panic, has now been improved by the demand for labour.

To these facts we must add one more: the added publicity which is being given to Canadian fruit. In British Columbia, in the Niagara Peninsula, and in Nova Scotia, great efforts are being put forth to increase consumption by direct advertising, and good results are assured.

With all these factors working in favour of the fruit industry, the coming season should be a very successful one in all respects, and not one to justify the uneasiness that is now apparent.

THE ENTOMOLOGICAL BRANCH

INVESTIGATIONS IN THE CONTROL OF VEGETABLE INSECTS

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST

GROWERS of vegetables are continually troubled with various common insect pests which every year levy a very heavy toll, and in addition to the regularly occurring kinds, there are almost every season outbreaks more or less

widespread in occurrence, of little known species or of certain ones which occur intermittently, such as, for instance, the army-worm, which in 1914 cost the province of Ontario alone a quarter of a million dollars. It has been estimated that at least

twenty per cent of vegetables grown every year are destroyed or rendered useless by injurious insects. The wide-awake grower is every year learning more and more about the common forms of insects which, almost every season, attack in varying degree the different vegetables which he grows. It is surprising, however, that in many parts of Canada, growers of vegetable crops have not given sufficient attention to those kinds of insect pests which occur almost annually, and which, of course, destroy, more or less, cabbages, cauliflowers, tomatoes and other cultivated plants. Such losses could often be entirely prevented or a large percentage of the crops saved if the grower had properly investigated the injury and applied the correct remedy. It is not, of course, necessary that the vegetable grower should make a special study of the insects themselves. He has not the time nor the inclination to do this. What every grower should, however, particularly notice when an insect is attacking a crop is how it feeds—whether it bites its food or sucks it up through its beak which it inserts into the plant tissue. If the insect is a biting one a stomach poison, such as Paris green or arsenate of lead, is usually recommended, but if the species is a sucking one, such a stomach poison would be useless, because the insect would insert its beak through the poison and reach a safe feeding ground beneath. A contact insecticide is, therefore, necessary, for controlling sucking insects, and those usually recommended are kerosene emulsion, whale oil soap and tobacco preparations.

The Entomological Branch of the Dominion Department of Agriculture has devoted considerable attention to the study of vegetable insects and their control, and circulars and

bulletins have been published on some of the more important pests. Investigations are now in progress on the life-history, habits and control of cutworms, locusts, root maggots, etc. The Branch is anxious to co-operate with growers in every way possible. Prompt correspondence on the part of the grower, with specimens of the insects responsible for damage, is earnestly requested.

The present season has witnessed serious outbreaks of such well-known pests as the Red-backed Cutworm, the Army Cutworm, the Lesser Migratory Locust, the Onion Maggot, the Cabbage Maggot, the Seed Corn Maggot, the Colorado Potato Beetle, etc. Since the publication in the April issue of THE GAZETTE of a new poisoned bran remedy for cutworms, we have conducted further experiments in the control of these caterpillars and in certain dry areas, such as in Southern Alberta, we have found that where shorts was substituted for bran better results were secured. As to locust control, we are carrying on extensive experiments in the provinces of Ontario and Quebec and hope soon to be able to report our results. Experiments carried on in 1914 are discussed in Entomological Circular No. 5. The protection of cabbages and cauliflowers by placing tarred felt paper discs around the stems at the time of planting out has again given satisfaction. For radishes and onions fresh pyrethrum insect powder, 2 ounces in one gallon of water, or white hellebore in the same strength, has some years given good results, the mixture being applied once a week for three weeks from the time the plants appear above ground. Owing to the cost of the material, however, the use of either of these insecticides at the above strength is only practicable on a small scale.

THE HEALTH OF ANIMALS BRANCH

WORK OF THE MEAT AND CANNED FOODS DIVISION

THE Meat and Canned Foods Division was very busy during the last eight months of the fiscal year ending March 31st. Prices for live stock were fairly well maintained when the exceptionally large run of these animals is

considered. This was no doubt due to the foreign demand for meats.

The following tables will show the increase in our meat exports, as also the increase in the number slaughtered under inspection during the first four months of the Calendar Years 1914 and 1915.

LIVE STOCK SLAUGHTERED AT INSPECTED ESTABLISHMENTS THROUGHOUT CANADA

	Cattle	Sheep	Swine
January, 1915	29,874	13,885	336,173
" 1914	26,242	17,152	196,560
February, 1915	24,968	5,014	288,173
" 1914	19,217	7,484	175,169
March, 1915	35,863	4,704	257,114
" 1914	25,960	5,412	166,872
April, 1915	40,958	2,089	201,894
" 1914	40,189	5,431	168,671
Total, 1915	131,658	25,692	1,083,354
" 1914	111,608	35,479	707,272

EXPORTS TO GREAT BRITAIN FOR EIGHT MONTHS ENDING MARCH 31st, 1915, AND SAME PERIOD, 1914

	1915	1914
	Lb.	Lb.
Beef	1,330,482	190,787
Bacon	61,935,602	15,573,948
Hams	6,917,423	1,203,729
Pork	5,793,870	54,784
Tongues	12,272	.....
Lard	1,804,441	.....
Canned Meats	5,996,900	273,122
All others	729,042	660,007

THE DAIRY BRANCH

THE CONSUMPTION OF CHEESE IN CANADA

BY J. A. RUDDICK, DAIRY COMMISSIONER

THE consumption of cheese in Canada is very small as compared with European countries, and probably does not exceed 3 pounds per capita per annum. In the United Kingdom, the annual consumption is estimated to be about 13 pounds per head.

Many people think cheese is indigestible and a cause of constipation. This is probably due to the fact that much of the cheese eaten in this country is immature and is added to a meal in which is already included a full allowance of protein.

Cheese should be eaten more as a substitute for meat than as an addition to a menu of which meat is the principal food. Pound for pound cheese has nearly double the food value of beef of average composition and has at least 25 per cent more food value than the edible portion of the best sirloin steak.

In view of the high nutritive value of cheese, and its low cost as compared with that of meat there would seem to be good reasons why an increased consumption should be encouraged.

A SMALL HOME TRADE

The home trade in cheese until recently, at least, has been so small, that very little attention has been paid to it either by the manufacturer or the wholesale merchant. The retailer, as a rule, is not a good judge of cheese, nor has he sufficient knowledge of the changes which cheese undergoes to control these changes and thus develop its best qualities or to retain those qualities when they are developed. This is important when it is considered that cheese are only partially cured or ripened when they are disposed of by the manufacturer. It may be added also that a not uncommon practice has been for the manufacturer to unload on the retailer some of the cheese having qualities which make them inferior for the export trade. Of course, this may not have been an unmixed evil, for it has protected the reputation of our cheese in the principal market for it, but it undoubtedly has been one of the factors influencing the consumption of cheese in this country.

Cheese made during the early summer if cool cured—that is not exposed to a temperature higher than 60 degrees F.—will, if properly made, be in good condition for eating during the following winter and will improve, under proper treatment, for a year or more.

Cool cured cheese should not be placed in cold storage. The finest qualities will be developed at a temperature of about 60 degrees.

A REMEDY FOR DRYNESS

Owing to the dryness of the climate in Canada and especially the dry atmosphere of shops and homes during winter months, the surface of a cut cheese dries out very quickly and thus becomes unpalatable, so that there is a considerable amount of waste apart from the shrinkage in weight. This fact has mitigated against both the sale and consumption of cheese to a considerable extent. The remedy is to keep cheese in a *nearly* air-tight receptacle so as to prevent the evaporation of moisture. Mould seems to grow more readily if the container is absolutely air-tight.

A cheese weighing about 10 pounds is a convenient size for selling at retail. In using such a cheese a good plan is to cut it in two and dip the fresh surface of one-half into melted paraffine wax which will retain the moisture while the other half is being eaten. All cheese for home trade should be dipped in paraffine wax before being placed in storage. This has the effect of preventing shrinkage and retaining the moisture which gives the cheese its mellow, meaty texture.

There is a good opening in Canada for cheese factories to cater to the home trade by making cheese of suitable size and by having them properly ripened before putting them on the market.

PART II

Provincial Departments of Agriculture and of Education

THE GROWING OF VEGETABLES

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

UP to the present time the Department of Agriculture of Prince Edward Island has not given special attention to the growing of vegetables.

There has been very little market for them in the province and the freight rate from Ontario and Quebec to the manufacturing towns of Nova Scotia has been cheaper than from Island points.

There are now a few "market gardeners" in the vicinity of Charlottetown. They ship by weekly

steamer to Cape Breton and to Newfoundland. The sailings are not sufficiently frequent to establish a regular market and the demand is consequently easily supplied.

It is expected, however, that the completion of the car ferry, making a one haul freight, will stimulate the development of a garden truck industry. The district representative in King's county will also give vegetable growing as much encouragement as possible.

NOVA SCOTIA

BY P. J. SHAW, PROVINCIAL HORTICULTURIST

A series of articles on "Vegetable Gardening in Nova Scotia" was published in the annual report of the Secretary for Agriculture for 1913. These articles were reprinted and circulated in pamphlet form. They comprised articles on the culture of all the vegetables ordinarily grown in Nova Scotia, articles on insects and diseases, cooking of vegetables, greenhouse construction, straw-

berry culture, beekeeping, and other topics.

The object was to call attention to the value of vegetables as wholesome and economical articles of diet and to stimulate people to grow and enjoy more of this kind of food. It was pointed out on medical authority that green vegetables, when well prepared and properly cooked, may often be very useful as remedial herbs, and that a vegetarian diet can

give good results, not only in the prevention and cure of disease, but also in the preservation of health in old age. Many persons fail to appreciate good vegetables through not having become acquainted with them in their youth, or not having had them fresh from the garden. In this Province the vegetable diet of a large portion of our population is too often limited to a few of the most common and easily grown and stored vegetables, such as potatoes, turnips and cabbage, while a family may easily be supplied from even a small piece of land with many of the choicer kinds. The effort required to do this would afford a pleasant

brought as rapidly as possible into a condition suitable for the growth of vegetables and fruits.

In the meantime, fairly sized areas are being devoted to potatoes, roots, cabbage, tomatoes, strawberries and celery, and on the better parts of the farm nearly all the vegetables that will succeed in Nova Scotia, from asparagus to the sweet herbs, are being grown. The aim is to utilize this farm to get acquainted with, and help solve, some of the truck garden problems of this province, and also to afford illustrations to our students and visitors of the growth of all kinds of vegetable garden crops. In addition to this a



PART OF THE TRUCK GARDEN AT THE AGRICULTURAL COLLEGE, TRURO, N.S.

diversion and healthful outdoor occupation.

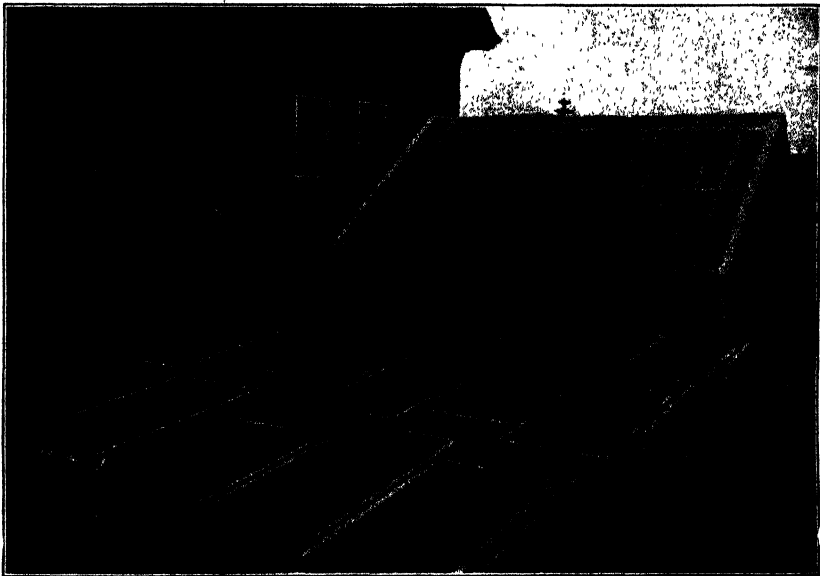
The Horticultural Department of the Agricultural College at Truro devotes considerable space and effort to the growing of vegetables. Two years ago a 30-acre farm, three-quarters of a mile east of the College buildings, was bought for the purposes of horticulture. Much of this land was in bush and the arable part was pretty well run out. By application of manure and fertilizers, and by tillage, the land is being

small vegetable garden is cultivated each year near the horticultural building for the special benefit of Rural Science students. These students, being teachers in the rural sections of the Province are interested in school gardens and elementary agricultural education.

There is little difficulty in the growing of most vegetables in Nova Scotia. The chief trouble is to find a profitable market. Not that there is lacking demand for these products, but because the demand is largely

supplied by shippers from outside the province. Wholesalers for some reason seem to give the preference to imported goods, possibly because they can in this way obtain a steadier supply. The remedy would seem to be for our growers to produce in larger quantities and to organize and market their crops co-operatively. The fruit growers have already done this, having opened a commission

In order to bring illustrations nearer to our country people, a start has been made in establishing demonstration vegetable gardens in different parts of the province in connection with several of the demonstration orchards. The tillage and fertilizing necessary for these gardens are also beneficial to the young orchards. The seeds and plants are



PARTIAL VIEW OF FRAME YARD AT THE HORTICULTURAL BUILDING,
AGRICULTURAL COLLEGE, TRURO, N.S.

house of their own in Halifax, in which they handle vegetables as well as fruit and other farm produce.

A small home-canning outfit was installed in the horticultural building last year to show students how the surplus vegetables from the garden might be utilized to extend the season for many kinds throughout the year.

provided by the Department of Agriculture, and the land, manure and labour by the owner. It is hoped that this will help to acquaint these people with a greater variety of vegetables and induce them to grow and use them, thus adding to their health, prosperity and enjoyment of living.

The French Minister of Public Instruction to the teachers of France:—

"A nation may be rich enough to spend millions in killing its enemies, but no nation is rich enough to neglect the education of its children."

QUEBEC

BY J. ANTONIO GRENIER, B.A., SECRETARY, DEPARTMENT OF AGRICULTURE

IN order to get the youth of our schools interested in the growing of vegetables and gardening work as a whole, the Department of Agriculture has established small gardens in rural schools, where children may learn to grow vegetables and to appreciate the products of their work. There are now 754 such gardens. This number will soon be increased to a thousand.

The work on the school garden is necessarily limited and proportionate to the size of the school grounds, to the age of the pupils, and to the time that the latter have to spare.

The Department of Agriculture supplies the seed, seedlings, some fertilizers and some instruction in the shape of pamphlets, charts, and record books in which each pupil-gardener records his work and keeps his accounts. (Bulletin No. 12 and "A Diary of my Garden.") Prizes are also given to the best pupils.

In districts where instructors cannot as yet be supplied to supervise these gardens, the supervision is done by the school inspectors, numbering about twenty-five, and who prepare themselves for this work by taking two annual short courses of fifteen days each, in one of the provincial schools of agriculture. The summer short course for school inspectors and school teachers will be held this year at the Oka Agricultural Institute and at the Macdonald College. These inspectors have given lectures on vegetables

and fruit growing in almost everyone of their schools.

The land, fences, farmyard manure and small tools necessary for the care of the garden are supplied by the school boards. All domestic science schools, which number about forty-five, must have a garden of this kind but of a larger size. At such schools a course in horticulture is also compulsory.

In April, the Department of Agriculture secured the services of an expert gardener and an assistant for giving practical demonstrations in Normal schools.

At the Jacques-Cartier Normal School, in Montreal, future teachers learn to grow vegetables and fruit on the three acres of the college grounds.

At the Laval Normal School, Quebec, ten acres were available which were chiefly used for poultry keeping and for practical demonstrations to pupils during the holidays. The place being a little too far from the school, the Department secured this year a garden and an orchard of six acres near the college. This includes a green house, an apiary, and poultry buildings. Lessons will be given by a gardener, a poultryman and a bee-keeper. As special crops will be required for feeding the hens and also for the bees, pupils will get training in gardening and fruit culture at the same time.

ONTARIO

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

VEGETABLE growing in the province of Ontario represents, roughly speaking, an industry of two million dollars an-

nually. This covers only that part of the industry which is devoted to growing vegetables for immediate consumption in towns and cities,

aside from the much larger area which has been devoted during the past few years to the growing of vegetable crops for canning factory purposes. It is clear, therefore, that the vegetable industry is sufficient to warrant considerable attention in the general work of the Department of Agriculture. This has been recognized for many years, but perhaps one of the most important steps was taken a couple of years ago when, by virtue of the money available under THE AGRICULTURAL INSTRUCTION ACT, it was decided to add a Vegetable Specialist to the staff of the Department who would devote his entire time to this industry. A graduate of the Ontario Agricultural College who had specialized in vegetable growing was secured, and the first work undertaken was that of greenhouse construction. Thousands of dollars worth of hot-house plants are imported into this Province every year, and while there are a number of hothouses which are producing early vegetables, there is still room for advancement along this line. Hence, a careful investigation was made of the question of greenhouse construction on this side of the line and in the United States, and a Bulletin was issued which is a standard by which any of those desiring to construct greenhouses may go. Along with this has also been made a study of greenhouse crops and something will in the near future be issued on this subject.

During the past winter, in view of the great attention paid to back lot and vacant lot gardening, the vegetable specialist was asked to prepare a brief but comprehensive Bulletin dealing with all kinds of vegetable crops. This was issued in as simple and understandable language as possible so that a man with little or no experience could possess himself of information which would enable him to make a success of his gardening efforts. Fifty thousand copies of this Bulletin have been issued and it has been sought, not

only from all parts of the Province, but from almost all the other Provinces of the Dominion. It has been accepted as one of the most useful and practical books on the subject.

Then, too, considerable work has been done along educational lines among those engaged in vegetable growing for a living around the larger centres of population. During the winter months short courses of one or two days were held at which the problems of vegetable growers were discussed by experts, and the latest information was in this way disseminated.

Addresses by the vegetable specialist were also given at the courses in agriculture held by district representatives in the hope that greater interest might be developed in the garden on the farm even where it was not counted upon as a financial asset.

During the summer months the chief work in hand consists in experiments with different diseases. At the present time experiments are being carried on in the spraying of celery in several districts. This is more in the nature of a demonstration than an experiment, as an experiment was carried on in this line last year and proved conclusively that spraying would control celery blight and save thousands of dollars to the growers. Other experiments include cabbage root maggot conducted in three districts, onion blight in one, and sterilization of the soil in one.

Work is also being done in the marketing of early tomatoes on Pelee Island, and in the development of a supply of home grown seed, for which we have heretofore been dependent on outside sources.

The pioneer work in the encouragement of vegetable growing has, however, been done very capably by the Ontario Vegetable Growers' Association which includes branches organized in all sections of the Province. They hold an annual

convention for the discussion of problems of timely interest and they also hold branch meetings from time to time throughout the year at which addresses by able growers are delivered. They have undertaken considerable in the way of co-operative buying of seed or other supplies, and in this and other ways have been of great benefit. To their activities during the past few years has been added an annual crop competition which has also developed great interest. These competitions are confined to four classes, *viz.*: onions, tomatoes, celery and early potatoes. Members of branches compete among themselves for the prizes offered in their respective districts. They may compete in any or all of the field crops mentioned, but there must not be less than ten entries in each class from each district, and the plots entered for each class must not be less than a quarter of an acre. Onions may be of any colour, but must be grown from seed. They may not be transplanted, however. For the purpose of the competitions the Province is divided into four districts as follows:—

1. Cyrrville, Ottawa, Kingston and Belleville.

2. Toronto, St. Catharines, Welland, Dunnville, Lincoln and Welland.

3. London, St. Thomas, Stratford, Brantford and St. Williams.

4. Blackwell, Ojibway, Canard River, Sarnia and Tecumseh.

Judges are provided free of charge by the Ontario Department. The prizes offered in each district for each of the four classes are: 1. \$25; 2. \$20; 3. \$15; 4. \$10. If the prize lists of the Canadian National Exhibition, the Central Canadian Exhibition, and the Western Fair are considered satisfactory, prize winners are required to compete at these fairs. Express charges on the prize winning vegetables at these fairs are defrayed by the Ontario Government.

In addition to the above, considerable experimental work in vegetable growing is carried on at the Ontario Agricultural College and at the Vineland Experimental Station, in fact the importance of the industry was recently recognized by adding one of the leading vegetable growers to the advisory board in connection with the Vineland Station.

All these factors are contributing materially to the upbuilding of an already important industry in this Province.

MANITOBA

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THE interest in vegetables and other market garden crops in Manitoba is steadily increasing. It has been the custom in the past for many farmers engaged in grain growing almost exclusively to ignore the farm garden, even to the extent of purchasing their table supplies of vegetables from neighbouring sources. The production of garden produce has been so far below the crying demand of the cities in this province that very large importations have flourished, and the

inconsistency of this state of affairs in a province, which can produce such a wide range of highest quality garden crops, has been very apparent in the past.

The Manitoba Department of Agriculture and the Manitoba Agricultural College, the Manitoba Horticultural and Forestry Associations and the local horticultural associations have done much to improve conditions. Vegetable growing was made a strong feature of the horticultural convention last year and

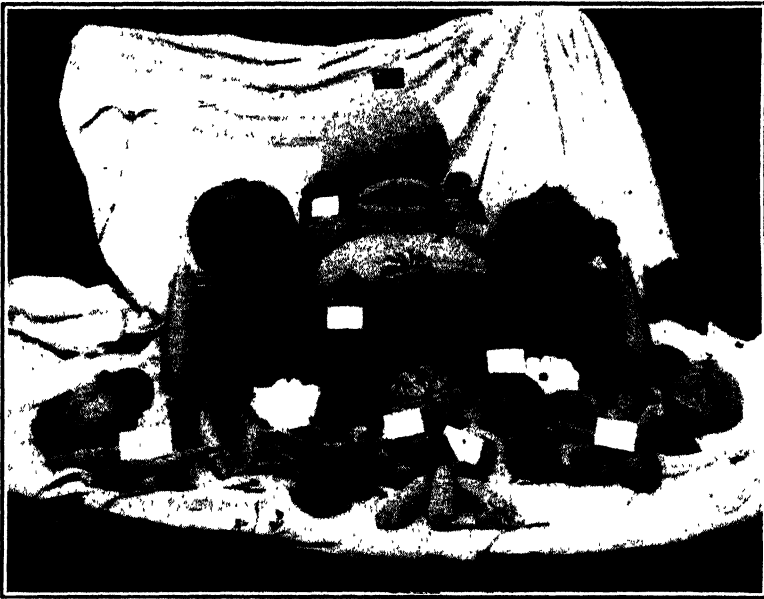
much valuable discussion resulted as to the growing of vegetables on a commercial basis and the benefits obtained from that kind of work.

New horticultural societies have been organized at Stonewall, Neepawa, Souris, Pilot Mound, Crystal City, Killarney and Dauphin with immediate quickening of general interest in garden produce.

Every year the Manitoba Agricultural College and the Department have endeavoured to improve the system of gardens by conducting

"The Horticulturist," a publication devoted to the interests of gardening, is a regular visitor among all members of horticultural societies and others interested in this sort of work.

In the city of Winnipeg the Civic Improvement Committee of the Industrial Bureau has a clearing office for information concerning the cultivation of vacant lots in the city; anybody desirous of having a garden can secure vacant lots listed by owners for the purpose. This year,



DISPLAY OF VEGETABLES GROWN NEAR WINNIPEG

garden competitions and various garden exhibits, held in the fall. The staff has done much excellent work in judging at these competitions and the bulletin on "The Farm Garden," written by F. W. Brodrick, Professor of Horticulture and Forestry at the college, has been widely circulated throughout the province to great advantage. The improvement in gardens has been particularly noticeable in the St. Vital and Kildonan districts.

particularly, interest is keen in the production of something from vacant lands in and about Winnipeg. A Home Garden Competition has been inaugurated with prizes of \$25, \$15 and \$10 for the best back yard garden. Quite a large number of five, ten and fifteen-acre lots in the adjoining municipalities, hitherto standing idle, are being utilized this year.

In handling the unemployed problem, the city council has undertaken

to plant several large plots of land in order to give employment to idle men. The same idea was carried out

potatoes at the old agricultural college site.

Mr. Charles F. Roland, Industrial

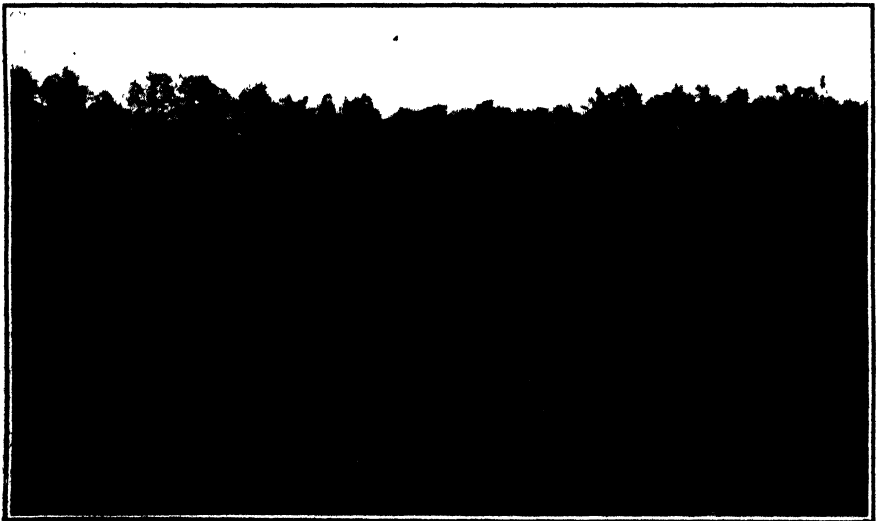


FOUR AND ONE-HALF ACRES OF CUCUMBERS

Grown by A. S. Lay, East Kildonan, Manitoba

by the provincial government, who furnished work for a large number of men by planting some 400 bushels of

Commissioner, reports the question of production from vacant lots in Winnipeg and surrounding munici-



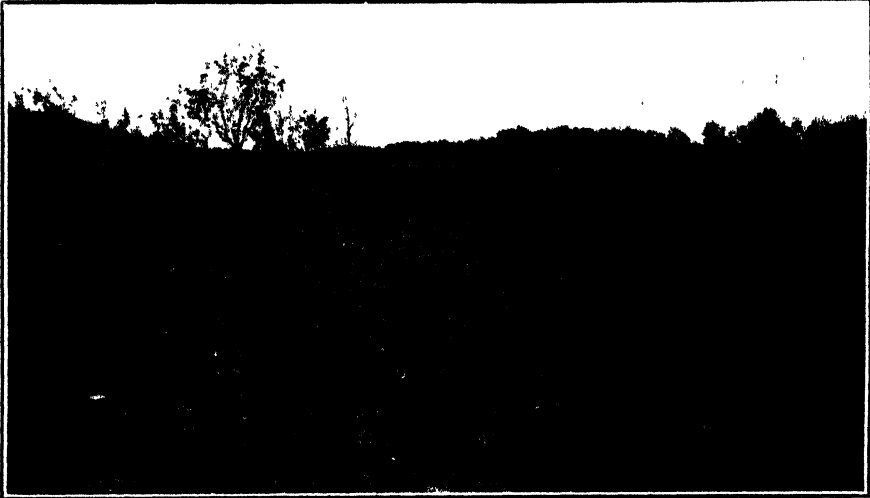
PICKLING ONIONS

Grown by A. S. Lay, East Kildonan, Manitoba

palities as a distinctly live issue this year.

A similar report has been received from Mr. J. Giddings, Secretary of the Vacant Lot Cultivation Society at Brandon, where about one hundred

looks upon this year as a mere beginning, the ready response and enthusiasm of applicants argues well for the permanent success of the scheme. To add to the interest the prize-list of the Brandon Horticultural Society



LETTUCE GROWN AT EAST KILDONAN, MANITOBA

lots in all sections of the city have been cultivated and planted. In the south end of the city property has been let out in one and two-acre plots and while the committee in charge

Exhibition, to be held on September 1st and 2nd this year, contains several special prizes for vacant lot cultivation.

ALBERTA

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

THE Alberta Department of Agriculture is fully seized of the fact that the general tendency towards extensive rather than intensive agriculture on the prairie, and the circumstances attending the establishment of farm enterprises on wild land, are not favourable to garden development. On the open prairie the buildings are large; cultivation is undertaken for quick commercial gains; money-making rather than home-making is the motive behind many farm undertakings, and there has not been

much progress towards securing good living from the well-tilled garden plot. Canned corn, canned raspberries and canned soups from factories are not so wholesome or economical as the home-products of the same kind.

On the smaller farms the demands on labour in clearing, breaking, fencing and building are so great that garden development has been slow here also. A good garden is recognized as necessary to economical, wholesome and pleasurable home living.

DIRECT ENCOURAGEMENT

The Department of Agriculture has issued for free distribution a concise but comprehensive bulletin on vegetable gardening. In its production the services of the principals of the schools of agriculture have been used. The land allotment at the demonstration farms, where schools are established, gives a plot of twenty acres for laboratory and experimental use by the agronomy teachers. Part of it consists of a typical garden to show concretely

soil, location and exposure, preparation, objects served by tillage, efforts of cultivation explained, irrigation, manures and commercial fertilizers, time to plant, method of planting, good seed, thinning, harvesting and storing, construction, preparation and use of the hotbed, insects and insecticides.

A valuable part of the pamphlet is the naming of varieties suitable for the province as determined by actual tests in demonstration gardens. The list includes every common vegetable



CAULIFLOWER AND CELERY GROWN AT EDMONTON, ALBERTA

what can be done with the farm garden plot in the production of vegetables, flowers, small fruits and shrubs. As the farms are in three different sections of the province, the matter of the bulletin has been harmonized and varied to meet different conditions. It takes account of both irrigated gardens and those depending upon natural moisture, and is, in fact, a complete handbook for vegetable gardening in Alberta.

Some of the topics are: garden

of the root, salad, and gourd sorts, as well as corn, tomatoes, and early and general varieties of potatoes. The bulletin is in large request.

THE ALBERTA POTATO

The general suitability of the Alberta soil and climate for the production of good vegetables is typically shown in the quality of the potatoes. Special work is being done by the Department of Agriculture to foster and organize the production of

this important product and concurrently to establish good marketing conditions and connections. This work promises large results without great effort. Everybody grows some potatoes and everybody usually grows a surplus, but small surpluses of different types and varieties are commonly sold or traded at low prices. The work in which the Department is engaged has the following aims:—

- (a) The distribution of reliable information on potato growing.
- (b) The limiting of the number of varieties.
- (c) The determination of the best general varieties.
- (d) The organization of potato clubs for the production of standard varieties in quantities.
- (e) The establishment of marketing connection.
- (f) The rigid inspection of the output.

An attractive bulletin has already been printed to the number of 15,000 and is being distributed. It includes a discussion of potato markets and co-operative production, preparatory cultivation, varieties, improvement by selection, planting, summer cultivation, harvesting and storing. Diseases and remedies are fully discussed and coloured plates shown to aid in the recognition of diseases.

POTATO CLUBS

An illustration of work in local organization is the case of the potato club organized at Stony Plain as ex-

tension work of the Department of Agriculture. The club was organized in 1913. Nine varieties of seed to the amount of a bushel of each kind were distributed to each of six farms, or farmers, and grown under an approved system of cultivation. A fair was held last fall, the potatoes were scored, tested by boiling and baking, the records of production were shown, and dealers were invited to inspect and pass on them. This year all the members of the club are producing Wee MacGregor potatoes to the limit of the seed produced last year; the club is enlarged and individuals are following the lead of the club members. A similar club is operating at Vermilion.

DIRECT PURCHASING

In the matter of markets, good results are expected. In fact the clubs are being watched by the dealers. The Department of Agriculture is likewise in negotiation with one of the largest transportation companies for the putting of the company in line to secure one hundred and thirty tons of selected baking potatoes for use in their dining cars. The company is out for Alberta potatoes for its Manitoba and Alberta divisions and has already furnished specifications and their preference in varieties.

The Department aims to impose rigid inspection on all products sold under its auspices and supervision.

“Courses of study in country schools need reconstruction and their work needs redirection. As human beings and as citizens, men and women living in the country have the same interests in the humanities (the term is used in its broad sense) and the things pertaining to civic life and citizenship that all other people have. But as farmers and farmers' wives, making their living from the soil and living in isolated country homes, their interests differ widely from those of men and women of the labouring and professional classes in the cities. However the case may have been in the past, it has now come about that farmers need a fuller, more extensive, more varied and thorough knowledge, a more comprehensive grasp of fundamental principles, and a greater power of adjustment than men engaged in other professions. The same is true of the farmer's wife as compared with other women. . . . Their courses of study need to be remade on the basis of what the farmer needs to know, and their teaching must take into consideration the environment and the raw material of experience of the country boy and girl.”—*Philander P. Claxton, United States Commissioner of Education.*

SOFT CHEESES

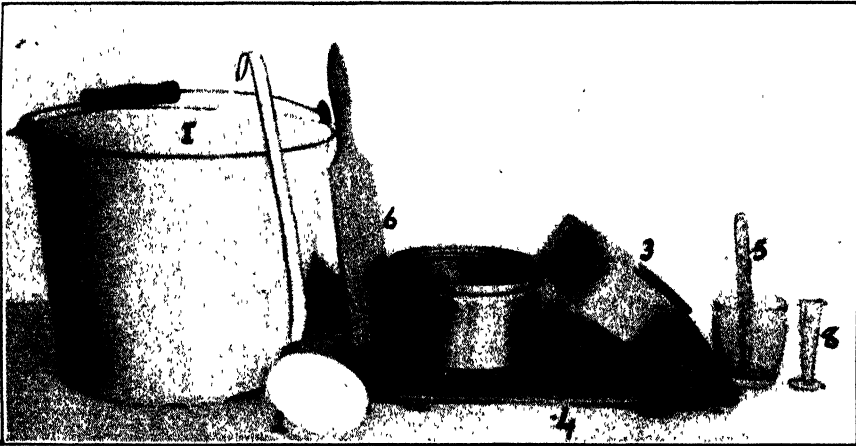
MACDONALD COLLEGE

BY MISS JENNIE REID, INSTRUCTOR IN HOME DAIRYING

THE two soft cheeses that are most in demand and are most popular are Coulommier and cream cheese. Within the last five years the demand for soft cheese has increased to such an extent that we are unable to meet the demand, owing to the fact that the milk has to be utilised for instruction in butter-making and hard pressed cheese as well. The public demand a fresh new cheese that can be eaten

making of soft cheese such as cream, the separated milk can be fed to calves. With the other varieties the whey can be fed to pigs. With this big demand to cater for has come the desire to know how to make the article to meet the demand. Fortunately no great capital or strength is required for the business of soft cheese-making.

One room only, the making room, is necessary, the air of which may be



UTENSILS USED IN THE MAKING OF COULOMMIER CHEESE

with salad without being cooked, and yet a cheese with a cheesy flavour.

Soft cheese-making should appeal to the dairy farmer and more especially to the small dairy farmer, who, as a rule, possesses little capital and only a few cows. It is of the utmost importance that he make out of milk that product which will give the biggest return. Where milk is sold everything is taken from the land. On the other hand in the

regulated to a temperature of 65 F. in winter and 60 F. in summer. It is essential that the room be kept at an even temperature in order to get the right degree of drainage. If kept at a high temperature rapid drainage of the whey takes place and hard gritty cheeses are the result. The aim is to retain the moisture to aid fermentation which is responsible for the digestible nature of soft cheese.

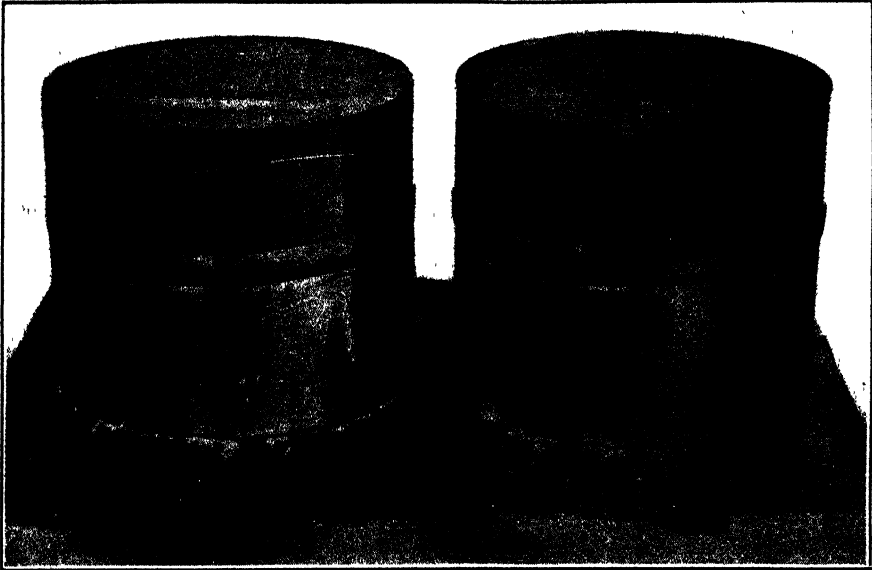
COULOMMIER CHEESE

Coulommier cheese not only aids digestion but is as nourishing as butcher's meat. This cheese is made from new milk, one gallon of milk producing two cheeses, which

it is generally eaten fresh from three days to a week from making.

Utensils required are few and are here listed with purchase price:—

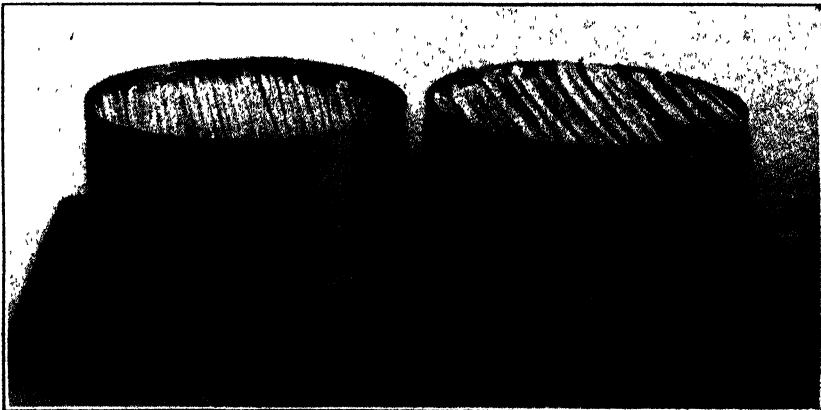
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|-----------------|----------|
| (1) Bucket..... | 50 cents |
| (2) Ladle..... | 25 " |



COULOMMIER CURD IN MOULDS

are sold wholesale at 15 cents each, retail at 20 cents to 25 cents each. The cheese weighs about one pound, is flat and circular, measuring $5\frac{1}{2}$ inches in diameter by $2\frac{1}{2}$ inches in thickness. As made in this country

- | | | | |
|---|----|---|------|
| (3) Moulds | 50 | " | each |
| (4) Boards, 14" x 8" and $\frac{1}{2}$ " thick..... | | | |
| (5) Thermometer..... | 25 | " | |
| (6) Wooden hand..... | 25 | " | |
| (7) Straw mat..... | | | |
| (8) Measuring glass..... | | | |

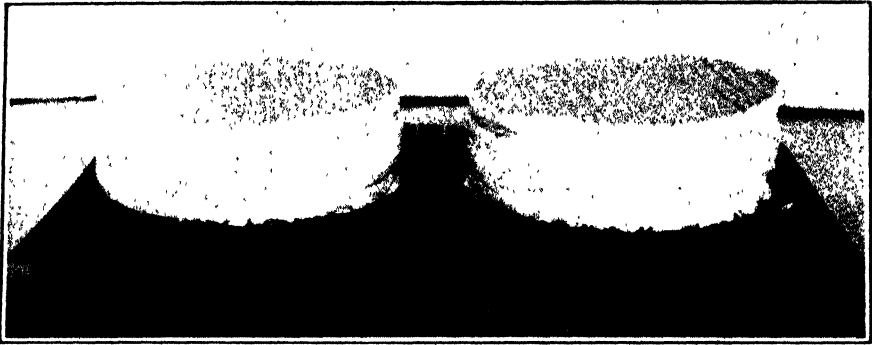


TOP HALF OF COULOMMIER MOULD OFF

The cheese usually takes three days to make. The curd is first ladled to top of mould as in 2nd photograph, No. 1, then allowed to stand 12 hours, when it sinks to the half as No. 2 of 2nd photograph. The top half of mould is taken off and cheese is turned and salted. It is then allowed to stand another 12 hours, when it is again turned and salted and mould removed ready for sale.

ounces and is made from cream of a 15 per cent butter fat. This may be taken from the separator of that thickness, or taken off at 25 per cent and diluted down with separated milk. It is profitable. The cream from 100 pounds average milk will make 25 cream cheeses which are sold wholesale at 15 cents each, retail at 20 cents.

From both cheeses the returns are



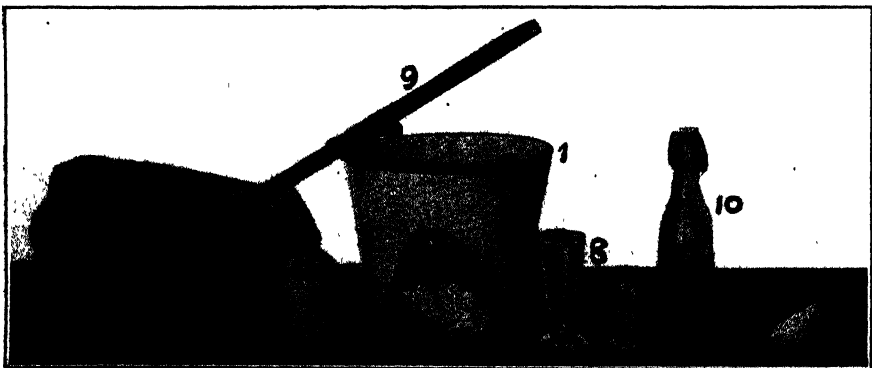
COULOMMIER CHEESE READY FOR SALE

CREAM CHEESE

For cream cheese the same room may be used for making. The extra utensils required are, mould for cheese, huckaback cloth and butter, muslin. The cheese weighs five

quick, both being marketable in three days, thus saving expense of storage.

For particulars as to manufacture consult Bulletin No. 25 on Coulommier Cheese and Bulletin No. 30,



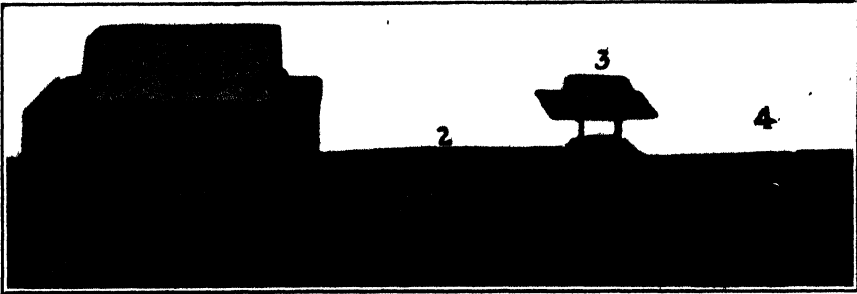
UTENSILS USED IN MAKING CREAM CHEESE

- (1) Pail, (2) Bowl and Huckaback Cloth, (3) Skimmer, (4) Thermometer, (5) Salt, (6) Mould, (7) String, (8) Measuring Glasses, (9) Stick, (10) Rennet, (11) Ladle, (12) Spoon.



CONTRIVANCE TO SHOW THE PROCESS OF CREAM DRAINING

Cream Cheese, Dairy and Cold Storage Commissioner's Series of the Dominion Department of Agriculture.



CREAM CHEESE

- (1) Curd under pressure (2) Curd ready for moulding
(3) Cheese moulded (4) Cardboard box.

ONTARIO

BY H. H. DEAN, PROFESSOR OF DAIRYING, ONTARIO AGRICULTURAL COLLEGE, GUELPH

THE Dairy Department of the Ontario Agricultural College, Guelph, has been giving considerable attention to the question of soft and fancy cheesemaking during the past five years. We have imported two cheesemakers from England, but the work is now under

the charge of Miss Belle Millar, who has been trained in our Dairy School.

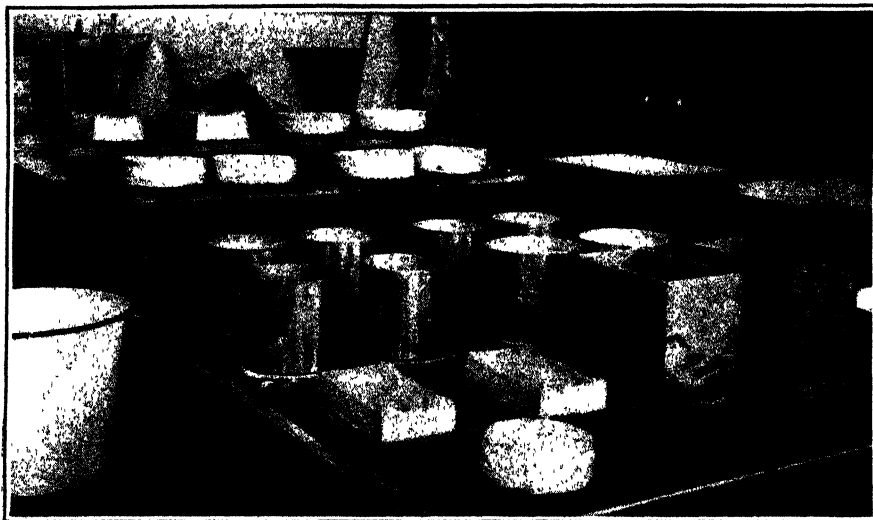
The three varieties we have most demand for, are, fresh Camembert, Gervais, and Cream. During the past three years our sales of these have been as follows:—

	Camembert	Cream	Gervais	Total
1912.....	863	1,762	914	3,539
1913.....	838	2,109	875	3,822
1914.....	620	2,970	449	4,039

We have not advertised them, but simply sought a market for our surplus cheeses made by students in their practical training; and also for those made in our investigational work as to methods of manufacture, and conditions best for holding and shipping. The details of these tests

may be found in the annual reports of the college. The methods of manufacture are described in Bulletin No. 206, pp. 28-31, of the Ontario Department of Agriculture.

The prices at which we sell the cheeses in Guelph are:—



APPARATUS USED IN SOFT CHEESE MAKING AND THREE COMPLETED CHEESES

Kind of Cheese	Wholesale	Retail
Gervais	7 cents each	10 cents each
Cream	10 " "	15 " " or 2 for 25 cents
Camembert { large size	12 " "	15 " " " " "
{ small "	7 " "	10 " " 3 " "

We usually sell to grocers in Guelph who send in orders; to students and others at the college; and to a few outside firms who have heard of our cheese from students or others.

As Canada imported for the year ending March 31st, 1914, over one and a half million pounds of cheese, chiefly of the fancy varieties, there is no reason why these should not be largely made at home.

Some people seem to think that the land campaign, which was gathering strength on the outbreak of the war, has been done for by Armageddon. I do not think so for a moment. The case for creating a better, brighter, and lovelier countryside is stronger than ever. We see that, in a time of emergency, the strong back and clear eye of the countryman are the very reservoir of national strength. We realize as we never did before how much it concerns the welfare of the United Kingdom to make rural life a finer thing than it has been.—*"Home Counties"* in the *World's Work*.

NEW BRUNSWICK

THE WINTERING OF ALFALFA

BY R. NEWTON, B.S.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

SOME experimental work was started last spring, in co-operation with a large number of farmers in every part of the province, with a view to ascertaining the possibilities for growing alfalfa. The seed used was of supposedly hardy strains from Dakota and Montana, also small quantities of the Grimm and Baltic varieties. The samples were one pound each, enough to sow one-twentieth of an acre. In every case the seed was inoculated before sowing.

Failures to secure a good catch were numerous, but these can be explained by unsuitable conditions. Where it was given a fair chance the alfalfa made a good start in nearly every case, and the plots entered the winter covered with growths ranging from 6 to 24 inches.

Results this spring are somewhat disappointing. The absence of snow during a large part of the season made the winter rather hard upon all kinds of clover, and the alfalfa plots seem to have come through

very poorly. Where conditions were ideal, that is, where the plots were covered with a heavy growth and the snow lay upon it continuously, the plants came through with practically no injury, but unfortunately such conditions obtained in comparatively few cases. In two cases the farmers mulched their plots with straw, and succeeded in bringing them through perfectly. In most cases, however, the farmers report winter-killing varying from 33½ to 100 per cent of the plants. The data secured thus far does not indicate any marked difference in the hardiness of the varieties tested.

It may be added that at Woodstock ten varieties grown in rows thirty inches apart, and cultivated during part of last season, came through without any injury whatever. In this case there was a growth of about eighteen inches in the autumn, which held the snow practically all winter. At this date (June 7th) they are about two feet high, and nearly ready for the first cutting, although it has been a backward spring.

QUEBEC

WOMEN'S INSTITUTES

BY J. ANTONIO GRENIER, B.A., SECRETARY, DEPARTMENT OF AGRICULTURE

WOMEN'S Institutes have been known for the last ten years in some European countries. They were organized as early as 1898 in the United States, but it is only quite recently that they were introduced in the province of

Quebec. This movement was reported on some time ago by the Director of the Journal of Agriculture and of Horticulture, who published a number of elaborate contributions on the subject. However, owing to the isolation of the farms

in the rural districts, and as the necessary preliminary organizations were only being formed, it was necessary to wait as late as the present time to make a start in the organization of Women's Institutes in Quebec.

The movement was launched in January, 1915, by the Honourable Mr. Caron, Minister of Agriculture, at the suggestion of several officers of the Department of Agriculture. It originated with the travelling short courses, held during the winter in some twenty counties of the province. It has been shown by experience that it is not wise to start too large a number of associations at the same time, as difficulties generally arise, which, in order to be overcome, require prolonged and sustained efforts that can hardly be expected from pupils who have not yet learned to act in co-operation. Everything considered, the Department judged it wise to establish only a small number of clubs in order to be able to supervise the same thoroughly and to meet local needs promptly.

Women's clubs being the necessary adjunct of school gardens and domestic science schools, they should only be tried at first in such districts where school gardens have been a success and where domestic science schools are to be found, as the children, having been taught the principles of co-operation, and the first notions of agriculture, are better equipped to form part of these associations, which will stimulate their activity and teach them the importance of co-operation and economy.

Therefore, the first three women's clubs were established in these districts: At Roberval, Lac-Saint-Jean county; at Chicoutimi, Chicoutimi county; at Champlain, Champlain county.

All women and girls who take an interest in agricultural matters may form part of these clubs. However, as most of their members are recruited among young girls, these

organizations have received the title of "Cercles des Jeunes Fermières," (Young Farmers' Women's Clubs), which differ to a certain extent from the women's organizations that have been known for some time in this country under the name of Women's Institutes. The chief object of the latter is to teach domestic science, sanitation and the care of the home, whilst our clubs deal mainly with agricultural matters, their objects being:—

1. To teach women a knowledge of rural matters and make them interested in such matters.

- (a) By the establishment of a co-operative library.
- (b) By the study of various questions of domestic economy, agricultural bookkeeping, hygiene, flower growing, ornamental shrubs, and other matters of agricultural importance.

2. To encourage the development of small agricultural industries of particular interest to women, viz., dairying, bee-keeping, poultry-keeping, horticulture, arboriculture, etc.

Their statutes have been framed after the present statutes for women's institutes, modified according to local needs. Being always in contact with the Department of Agriculture, these clubs secure the services of technical and practical experts and lecturers, who give them the information which they require. So far, they have been supplied with all the necessary equipment to manage a bee hive, a poultry house, an orchard or a garden, according to modern methods.

This spring, each one of these clubs, which average fifty members, were visited by our instructors of the fruit division, who themselves planted 600 apple trees, 400 prune trees, 800 strawberry plants, raspberries, gooseberries and currants.

Each club also received from the bee-keeping division, 50 dozens of eggs for incubation, which was conducted under the supervision of special officers. They also received a complete bee-keeping equipment.

The results obtained so far are very satisfactory and a large development of the work is anticipated.

THE MAPLE SUGAR CROP

THE maple sugar crop of 1915 has hardly shown the abundance in Quebec that it was hoped it would. On the contrary, Mr. Joseph H. Lefebvre, secretary of The Pure Maple Sugar and Syrup Co-operative Agricultural Association, states that the season, so far as the Labelle County School, of which he is also superintendent, is con-

cerned, has been "the worst known to any living man." The weather has been unfavourable, the cold of the day being accompanied with chilling dry winds. From Beauceville and Ste. Louise, L'Islet, as will be seen by the particulars herewith given, the yield has been decidedly better:

SUGAR-MAKING SCHOOLS, 1915

BEAUCEVILLE

Superintendent: Mr. Alex. Bolduc, Beauceville.

Attendance:—

Pupils	3	
Visitors	347	
Syrup manufactured	329 ½	gallons
Sugar manufactured	216	lbs.
Sugar-wax manufactured	119	"
Number of maple-trees	3,000	
Length of the season, March 22nd to April 22nd.		

STE-LOUISE, L'ISLET

Superintendent: Mr. L. J. A. Dupuis, Village-des-Aulnaies.

Attendance:—

Pupils	12	
Visitors	605	
Syrup manufactured	407	gallons
Sugar manufactured	400	lbs.
Sugar-wax manufactured	400	"
Number of maple-trees	4,000	
Length of season, March 29th to April 29th.		

MINERVE, LABELLE

Superintendent: Mr. J. H. Lefebvre, Waterloo, Que.

Attendance:—

Pupils	4	
Visitors	35	
Syrup manufactured	280	gallons
Sugar manufactured	65	lbs.
Sugar-wax manufactured	10	"
Number of maple-trees	3,000	
Length of season March 23rd to April 20th.		

Demonstrations on the manufacturing of maple sugar and syrup were given in the spring of 1915, in a number of sugar factories of Portneuf county as follows:—

	Attendance
April 6—Mr. Sadoth Tessier, St-Casimir	135
" 7—Mr. J. P. Tessier, St-Casimir	75
" 9—Mr. Galarneau, St. Casimir	30

" 12—Mr. Wilbrod Perreault, St. Casimir	71
" 14—Mr. Joseph Julien, St. Alban	75
" 15—Mr. Delphis Lachance, St. Thuribe	64

Mr. Lefebvre directs attention to the fact that there is now a law on the statute books prohibiting the making of anything resembling maple sugar or syrup and unwarrantably using the word "maple."

MACDONALD COLLEGE

ORCHARD DEMONSTRATIONS

BY T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE

THE Horticultural Department of Macdonald College in co-operation with the College demonstrators held eighteen orchard demonstrations during the latter part of April and early May. The meetings were held in orchards in each section visited, and, after a general talk on the apple orchard, including choice of varieties, planting, management, etc., a practical demonstration in pruning was given, followed by the home manufacture of concentrated lime-sulphur wash, its dilution and then, with the addition of arsenate of lead, an application of this spray was made to the trees. Occasion was taken during these meetings to point out and discuss the common insects and fungous diseases of the orchard and their treatment. The bud moth, aphids, oyster-shell bark-louse, canker, etc., could be found in most of the orchards visited. In nearly all of these sections many small to medium sized orchards are growing and occasionally large orchards, but in general spraying has not been understood, and it is only recently that the growers have given it much

consideration. All these sections have many advantages for apple growing provided the right varieties are chosen and reasonable care is given to the trees thereafter.

In addition to the general discussion and demonstration, circulars containing brief information were distributed and it is hoped that increased interest will be taken in the orchards in future.

The following is a list of places where meetings were held and the number of people in attendance:—

Scotstown	35
Sawyerville	12
Lachute	5
Calumet	13
Hemmingford	15
Valleyfield	10
Sherbrooke	6
Compton	14
Magog	15
Way's Mills	3
Beebe Junction	16
Dixville	14
Danville	16
Melboro	15
Gore	12
Denison's Mills	15
Sweetsburg	40
Cowansville	14

Total attendance. 270

ONTARIO

SOME FACTS AND FIGURES IN REGARD TO SILO CONSTRUCTION

THE following article, contributed to THE AGRICULTURAL GAZETTE by Mr. R. Austin, B.S.A., District Representative for Welland county, is the result of a silo investigation conducted in

that county by the writer. The figures, while of a more or less local nature, should prove of interest to all readers interested in silo construction.

That the silo has come to the farm

to stay cannot be disputed—the only drawback being that it has not come to nearly enough farms. Those who have been so fortunate and far-sighted as to erect substantial silos are, almost without exception, very enthusiastic about its value in saving feed, preserving it in a better and more palatable condition, and ensuring increased profits thereby.

Experience has shown that there are many ways in which a silo is of advantage in successful farming. A few of these advantages are as follows:—

1. Silage is cheaper and more convenient than fodder corn.
2. A given amount of corn as silage will produce more milk and beef than the same amount shocked and dried.
3. Space is saved, as 10 tons of silage occupy the same space as one ton of hay.
4. Pasture acreage can be reduced by the use of the summer silo.
5. Silage is not hard to handle and may be fed, if proper care is used, to all kinds of stock.

KINDS OF SILOS

A great many adhere to the stave silo, others become impressed with the greater longevity of the concrete structure, while a few are erecting the more pretentious glazed tile. The chief question to be decided is whether the silo will preserve the corn in good condition or not, and after that comes the consideration of cost. Cheapness in the first cost may appear like a saving of money, but will usually prove the opposite, in a silo that will be tumbling to pieces in a few years. Moreover, the wooden silo is not so much cheaper than the concrete as is usually supposed. Out of a report obtained from the owners of 12 stave silos in this county, the average cost was found to be \$189, while the

average of 21 concrete structures was \$191—a very small difference indeed. These were all of various sizes. In comparing the difference in cost of silos of the same size, we found the following:—

Size of Silo.	Variety.	Cost.
30' x 12'.....	Stave.....	\$175
30' x 12'.....	“.....	100
30' x 12'.....	“.....	208
30' x 12'.....	“.....	250
30' x 12'.....	“.....	95

Making an average of \$165.60 for the stave.

30' x 12'.....	Cement.....	\$210
30' x 12'.....	“.....	180
30' x 12'.....	“.....	217
30' x 12'.....	“.....	158

Making an average of \$191 for the cement.

In many cases, however, the hauling of the gravel, sand and cement, and much of the other work was done by the farmer himself, thus saving considerable expense and bringing the average cost of a concrete silo down to about that of a stave.

Only two steel silos were found in the county, \$262 being the average cost of this style. There were 3 glazed tile structures, costing about \$316 each, these are more expensive than the other styles, but of a much more finished and imposing appearance. From such a small number, however, it was impossible to obtain any conclusive information, and these had not been very long in use.

In regard to the keeping qualities of silage in stave and concrete silos, most of the owners of both sorts reported a slight freezing for a few inches in, but mainly agreed that the ensilage remained in good condition throughout the winter. Thus it would seem that a stave silo would be fully as good as a concrete, but when we realize how much longer the latter will stand, it would seem to be good policy to prefer it to the stave.

Following is a list of some of the figures for building stave, concrete, steel and tile silos respectively.

Stave Silos.	Cost.	30' x 10'.....	124
28' x 10'.....	\$ 98	34' 4" x 11' 10" (Block).....	232
30' x 14'.....	250	35' x 12'.....	186
40' x 15'.....	305	40' x 12'.....	215
30' x 12'.....	175	35' x 12'.....	225
30' x 12'.....	208	30' x 16'.....	287
36' x 12'.....	300	30' x 12'.....	217
30' x 10'.....	158	40' x 12'.....	215
28' x 10'.....	124	30' x 12'.....	158
30' x 12'.....	100	35' x 12'.....	220
30' x 12' (Two).....	250		
26' x 13 1/2'.....	113	Tile.	Cost.
30' x 11'.....	95	34' x 10'.....	\$227
		40' x 12'.....	392
Cement.	Cost.	32' x 10'.....	330
32 1/2' x 12 1/3'.....	\$165		
35' x 12 1/2'.....	*50	Steel.	Cost.
32 1/2' x 12 1/4'.....	110	32' x 14'.....	\$200
30' x 9 1/2'.....	248	30' x 16'.....	325
30' x 12'.....	210		
30' x 10'.....	137	Average cost of 12 stave silos.....	\$181.33
30' x 12'.....	180	Average cost of 21 cement silos.....	187.09
30' x 10'.....	149	Average cost of 3 tile silos.....	316.00
40' x 10'.....	213	Average cost of 2 steel silos.....	262.50
30' x 10'.....	150	*Labour.	
32' x 10' (Block).....	238		

NOTES FROM DISTRICT REPRESENTATIVES

The following extracts, taken from the weekly reports of the district representatives, are furnished by Mr. C. F. Bailey, Assistant Deputy Minister of Agriculture for Ontario.

LAMBTON COUNTY

G. R. Bramhill, B.S.A.:—

"On Wednesday a meeting of the officers and directors of the Lambton Corn Growers' Association was held in the Agricultural Office. At this meeting several matters of importance regarding the corn growing industry were considered. It was decided to standardize the various varieties of corn best adapted for Lambton county. A committee was appointed to take this matter up with Mr. L. H. Newman, Secretary of the Canadian Seed Growers' Association, and myself. It was also decided to further develop the seed corn trade on a co-operative basis. In order to protect the name of the association and to insure a yearly supply of the very best seed corn, it was decided to lay down certain rules for those wishing to take advantage of the association for marketing their corn. Any person wishing to dispose of his corn through the association must enter the field upon which the corn is grown in the Field Crop Competition. If the field comes up to a certain standard set by the executive the grower will be given a certificate of merit. Furthermore, all seed sold by the association must be put up under an inspector appointed by the executive and bags sealed by the

inspector. By following up this method I think Lambton county should be able to produce a uniform standard quality of seed corn and develop an industry on a basis which will prove attractive to purchasers of seed corn in the more northerly and easterly counties."

OXFORD COUNTY

G. R. Green, B.S.A.:—

"At a meeting of the directors in Dereham township, my attention was drawn to the fact, by one of the teachers, that there are very few of the Department bulletins on file at the different schools. One teacher reported that she used to have a Weed bulletin, but it had been mislaid, and she did not know where to secure another one, as it was not kept by book dealers. I intend preparing a circular, shortly, mentioning the names of the bulletins furnished by the Department which are suitable for children, and if the teachers and pupils can persuade the trustees to arrange an agricultural cupboard in the school, I will do my part in seeing that these cupboards are kept supplied with up-to-date bulletins furnished by the Department. There seems to be a growing demand, particularly by the children, for books of this kind, and I believe the only reason why they are not more generally used by the pupils is that they do not know where they can be secured.

"In connection with our school fair work in West Zorra, I have been approached by a trustee who happens to be one of the

board of directors for the Embro Fair. He asked if it would be out of place to offer a prize at the Embro Fair for the best collection from any school in the township. I assured him it was quite in order, and I would be only too glad to do what I could to advertise it. He asked what would be a suitable prize, whether it would be wise to pay cash, or furnish the school with some useful article. I suggested a Babcock tester for the school, a suitable cupboard for keeping agricultural bulletins which would be supplied by this office, or a number of copies of the best standard pictures. He was strongly in favour of the first mentioned prize, and intends taking the matter up with the other directors at their next meeting."

GLENGARRY COUNTY

D. E. MacRae, B.S.A.:—

"Last week we had twenty-six enquiries about the treatment of smut in oats, also nine for the treatment of scabby potatoes. Six farmers called asking for individual instruction in the planting of young apple trees and we went to each man's farm and showed the owner how to prune and plant a young tree. Four of these men also asked that we choose the location of the orchard. From twenty-six to forty-five were the number of trees planted.

"Last week the Junior Farmers' Association met and decided to do the work under our direction of collecting the money for the Roxborough School Fair prize list. This includes the five dollars from each school and the asking of contributions from prominent men."

GREY COUNTY

H. C. Duff, B.S.A.:—

"We are still receiving many requests from rural school children in particular for a number of bulletins that we had listed on our school premium circular. As the result of this we have mailed since the first of January 556 bulletins."

CARLETON COUNTY

W. D. Jackson, B.S.A.:—

"The press bulletins sent to this office from time to time have been used in the local papers with some slight additions and we find that the demand for bulletins and reports as mentioned in these articles is quite extensive throughout the county.

"I would like to call your attention to the bulletin issued by the Department of Entomology of Ottawa on the 'Army

Worm.' This perhaps will give you an idea of the work which we had with the 'Army Worm' last year and the damage which it did in this vicinity."

WATERLOO COUNTY

J. S. Knapp, B.S.A.:—

"On Wednesday and Thursday we were measuring the fields in the Acre Profit Competitions. It was very encouraging when visiting the boys to find that they are putting into practice some of the things we tried to teach them in the winter short courses. The man who was president of the class has pruned his orchard, is keeping milk records and a record of the cost of feeding a pen of eight or ten hogs. Besides this, he is entering the Acre Profit and Hog Feeding Competitions. The other fellows that we visited are practically all trying something new. Speaking of junior farmers' work reminds me that a poultry competition would, I believe, take well with our boys. Could it not be arranged for a pen of fifty or one hundred hens, allowing 50 per cent for profit shown and 50 per cent for the flock, the prize being a free two weeks' course in poultry at Guelph? Two-thirds of the fellows in our class I believe were interested in poultry. It may be too late to start this year, but if the idea is worth anything, it might be kept in view for another year.

"Our Junior Farmers' Picnic at Elora on Thursday proved a great success. Although it was very wet in the morning, it cleared up by noon. All but about four or five of the boys were present. The committee arranged practically all the details of the picnic themselves.

"The Holstein breeders had their first executive meeting Saturday afternoon. At this meeting it was decided to push the weighing and testing end of the business so that we may have some record to show when the club offers cattle for sale. A visit is to be made to all the members' and prospective members' places by the president, secretary, director for the district and myself. The object of this visit is to inspect the stock, so that we will know exactly the class of cattle each member has. At the same time we will urge them to weigh and test their milk and will find out the number of cattle they have for sale and any other particulars worthy of note."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"The pupils asked a number of questions regarding the work, and it was quite common to be kept over one half hour at one

school answering questions about preparing soil, the depth to plant the different seeds, how to make collections of weeds, weed seeds, how to fix a sheaf of grain to best advantage, the best feed for the chickens, the size of potatoes for the fair, and numerous other questions about the school fair. At one school there were two or three pupils wanting to ask questions at once, and from school work it drifted to general farming, the variety of corn to plant in the field, how much to plant per acre, the best depth to plant potatoes, the thinnest hulled oats, what variety we thought best for that district. The questions then drifted to live stock, they wanted to know how to feed the colt and the calf, what breed of cattle we thought was best for milk and butter, how much milk should a good cow give in a year, how much it costs to feed a cow for a year. It ended up by ten or twelve of the pupils deciding that they would weigh the milk at home night and morning from each cow to find out which was the best. When they decided to do this much, I promised that if they wanted milk tested for butter fat, we would be pleased to do it for them. It was certainly a pleasure going around to the schools this week, as the pupils were particularly interesting. It may seem that we have plenty of time on our hands when we make two trips delivering the material. However, such is not the case, as this delivery was the potato war plots which we had not arranged for in time for the other delivery, and I began to think at the end of the week that it was time well spent. Visiting the schools the first time the pupils are shy and backward about asking questions and the more we become acquainted with the pupils the more good we can do."

RENFREW COUNTY

M. H. Winter, B.S.A.:—

"Our hatch of chickens came off on Friday last. We took this occasion to have a poultry exhibit in our window which attracted much attention. We had several callers inquiring about incubating chickens, suitable feed, etc. Anything like this of a practical nature seems to impress the people.

"The War Plot idea is migrating from the country into the town. I was approached by Mr. Bryan, Principal of the Collegiate Institute, and asked to address the Institute boys on War Plots. The boys have decided to cultivate potatoes on a vacant lot in town. This was used last year for school gardens in connection with the Community Movement. Several of the boys are also growing War Plots at home. We are providing the seed for those boys who wish to grow War plots."

LENNOX AND ADDINGTON COUNTIES

G. B. Curran, B.S.A.:—

"There will be a lot of corn grown for husking in this county this summer, in fact more than there has been for perhaps ten years. At that time nearly every farmer grew an acre or two of flint corn for husking, but owing to the scarcity of labour very little corn for husking has been grown of late years. This year I conducted a 'GROW AN ACRE OF FLINT CORN CAMPAIGN' through the local newspapers, and to my personal knowledge over 100 bushels of Longfellow Flint Corn has been purchased in this county for this year's sowing. This should sow at least 500 acres.

"Tuesday, May 25th, I visited the farm of Mr. Leo Flynn of Enterprise, the young man who grew 105 bushels of Longfellow seed corn on an acre of land last year. He was preparing another field for corn and showed me the field where he grew the corn last year sown with O.A.C. No. 72 oats. Mr. Flynn also built a new poultry house last fall, 30 feet by 16 feet on a cement foundation 3 feet high and a straw loft overhead for ventilation, and a front one-third cotton and one-third glass. This is the Lennox Poultry House and was built according to plans sent out from this office. Mr. Flynn has about 150 pure bred Rhode Island Red chickens hatched, and with his 25 old hens will winter about 100 birds, and next spring will be prepared to sell eggs for hatching to farmers in his locality at a reasonable price. I also looked over a field of about 20 acres that required drainage, being flooded with a spring at the upper end which overflows most of the season. He hopes to get the tile put in this fall. Mr. Flynn has also gone into pure bred Yorkshire pigs and high grade Shorthorn cattle and is one of the most promising young farmers in the county.

"During the past week we held two mustard spraying demonstrations. On Tuesday, June 8th, we sprayed 10 acres of oats very badly infested with mustard on the farm of Mr. J. Clarke, three miles south of Napanee. Thursday, June 10, we sprayed about 5 acres of oats on the farm of Mr. J. Spafford, Switzerville. The mustard in this case was so thick that one could not see the oats. We used in both cases 80 pounds of powder, Iron Sulphate and one barrel of water."

SIMCOE COUNTY

J. Laughland, B.S.A.:—

"I attended a meeting of Allenwood Farmers' Club on Friday evening and addressed a very interested gathering of about sixty farmers, taking up the subjects of Corn and Eradication of Weeds. Some

of the clubs are doing exceptionally good work as you will see from the following:—

'ORILLIA, May 15th, 1915.

'Dear Mr. Laughland:—

'Our officers for the present year were elected at the last meeting. They are: Geo. Hewitt, Hon. President and Membership Clerk; A. T. Reid, president; R. W. Holmes, 1st vice-president; T. F. Swindle, 2nd vice-president; R. A. Lehmann, secretary-treasurer; Fred Holmes, hay seed buyer; Geo. Hewitt, corn seed buyer; R. A. Lehmann, botanist, and John Ross, entomologist.

'The club with us has been a success the past year and all preceding years. We have started during its existence a Beef Ring, a Woman's Institute, a Rural Mail Route, a neighbouring Farmers' Club, a Telephone Association, a Ploughing Association, all of which are appreciated benefits. Besides the above we have got acquainted with each other and learned to appreciate our fellows.

'Yours truly,

(Signed) 'R. A. LEHMANN.'

PEEL COUNTY

J. A. Carroll, B.S.A.:—

"During our short courses at Bolton I gave the boys a brief course on Farm Management and Bookkeeping and got them interested in keeping a set of farm books. What we think will be a simple and efficient set of forms was devised and made up and six of the boys have undertaken to keep them under our guidance. These were taken out and complete inventories of real estate, live stock, implements, etc., were taken and the young farmers given a start. I have great faith in this commencement and expect to be able to make a valuable report in a year's time."

HALTON COUNTY

H. R. Hare, B.S.A.:—

"The first annual picnic of the Halton Women's and Farmers' Institutes was held at Milton on Wednesday, June 16th, about three hundred being present. After an early dinner the two institutes held business meetings separately. The idea of combining picnic and meetings on the same day resulted in greater interest in the latter. This was especially fortunate this year, as Superintendent Geo. A. Putnam has suggested a reorganization of the farmers' institute and a large number was needed to discuss the proposal.

"The closing feature of the day's outing

was a baseball game. This game was unique in that the opposing teams represented a new form of organization, namely, the Junior Farmers' Improvement Associations of Halton and Wentworth, respectively. The members of such associations must have taken the four weeks' short course held in their county by the Department of Agriculture. As the movement grows it is expected that greater intimacy and a good spirit will be developed between the farmers of neighbouring districts.

"I also called on a number of the Junior Farmers. In the afternoon at 4.30 the Junior Farmers met for a baseball practice. It surely is encouraging to note the interest taken in the organization of the young farmers. It has been proposed by one of our boys that we go over and play Ancaster Junior Farmers. I understand that the Ancaster Junior Farmers have organized for the same purpose. At the meeting after the baseball practice, it was decided to adopt 'The Canadian Countryman' as the official organ of the Junior Farmers, taking advantage of their reduced rate of 25 cents and contributing the other 50 cents toward the treasury of the Junior Farmers.

"The interest exhibited by the pupils in the school fair work does not seem to be lessening. It seems that in nearly every home in the district where the school fair work is being pursued, the pupils are full of questions whenever the representative or assistant from this office appears."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"Our Caterpillar contest ended with the collection of over seventeen thousand nests. The following boys won the five prizes:

	Nests.
1st. Herman Rogers	4,030
2nd. Fred Lister	3,554
3rd. Aubrey Brook	3,134
4th. Harry Keith	2,553
5th. Gordon Hunter	1,254

(NOTE:—This competition was announced on page 449 of THE GAZETTE for May, 1915.

"We also attended a business meeting of the Woodbridge branch of the Junior Farmers' Improvement Association and arranged for our summer meeting and picnic to be held on June 15th."

HALDIMAND COUNTY

G. L. Woltz, B.S.A.:—

"Considerable time has been spent among the members of the Junior Farmers' Improvement Association for the joint purpose of keeping in direct touch with

those taking part in the various competitions and in trying to work out a policy for the association. As a phase of the latter, I am considering the advisability of preparing a compact and neat exhibit of the more important phases of our work for the local fall fairs. This would be arranged in a small tent in some conspicuous place on the fair grounds. The tent would bear a suitable banner, and would be operated largely by the president and secretary. In addition to the prominence it would give the Junior Farmers and this office, I believe it would be a medium in working up a good class for the 1916 short course.

"We have just finished placing the variety tests for corn and have them well distributed over the County. Four of the experiments were placed with the junior Farmers the balance with outsiders. One of the effects of our six weeks' course was to stimulate a spirit of investigation. Anything in the line of a feasible experiment may be readily placed with our Junior Farmers, whereas outsiders often retain a high degree of indifference."

PRINCE EDWARD COUNTY

A. P. MacVannel, B.S.A.:—

"During this week the record shows that over 115 persons visited the office with reference to the following inquiries: diseases of poultry, corn experiments, regarding soluble lime-sulphur, spray materials, treating seed potatoes, obtaining work on farms, plans of barns and stables, drainage survey and Drainage Act, management of bees, obtaining seed corn, methods of planting ensilage corn, pruning, spraying for caterpillars, rearing chickens."

VICTORIA COUNTY

A. A. Knight, B.S.A.:—

"I am keeping a record of the number of calls which are made to the office for one thing or another. If this record were continued from year to year, it would be a valuable index as to increase or decrease of the interest in the office. I think it would be a good thing for all offices to do. It would mean some work of course, and considerable attention to details, but as I stated it would be valuable."

MANITOULIN ISLAND

I. F. Metcalf, B.S.A.:—

"I told you in my last letter about the sale of the wool which the Manitoulin Marketing Association made, stating that 18 cents was being paid locally at the time of the sale. I find that figure too high as only 17 cents was being paid here and 15 cents on other parts of the Island, which

makes the sale show up better yet. The Association is paying the farmers the highest price that was offered locally, which was an average of 20 cents, but being paid on a graded basis will run from 18 cents to 23 cents—the balance after expenses are paid will be carried by the Association as profits."

DUFFERIN COUNTY

H. A. Dorrance, B.S.A.:—

"I have been approached by a number of farmers to take them on a tour of inspection to a number of farms whose owners have been particularly successful in different lines, such as, live stock, corn growing, underdrainage, good types of buildings, etc. The party would probably consist of three cars and if you have any suggestions as to places where they might be taken on a trip of this kind, I would be pleased to receive same so that I can take the matter up in detail with those interested."

NORFOLK COUNTY

Geo. Wilson, B.S.A.:—

"We have had several calls from farmers to inspect the damage done by the frost the latter part of last week and by insects and disease to fruit and to field crops. Spy and Greening blossoms are in some cases injured by the frost. Other varieties seem to have escaped, but the June drop will tell. Prospects in this County are that the apple crop will only be about 40 per cent of that of last year."

DUNDAS COUNTY

E. P. Bradt:—

"We have been doing spraying to control mustard, using both the bluestone and iron sulphate. In the field which was sprayed the superiority of the iron sulphate over bluestone was quite marked. We purpose taking another field during the coming week and spray half of it leaving the remaining half unsprayed as a demonstration and will arrange to put up a small sign to draw the people's attention to this demonstration. The mustard seems to be particularly bad in this district this year, probably due to the fact that the cold, dry weather has held the grain back and given the mustard a chance to grow."

BRANT COUNTY

R. Schuyler, B.S.A.:—

"A meeting of the Junior Farmers' Improvement Association was held in the office of the district representative for Brant at Paris on June 12. Although the attendance was light some important work was done. Two of the men at the meeting

decided to test their cows. As two other members had previously made this start, there are now four of them in this work. They were supplied with sheets for recording weights and the cows will be tested monthly. One of the members has promised to spray his potatoes for blight. There are now six who have consented to enter the feeding hogs for profit competition, and the secretary is taking up the matter with those who were not present at the meeting. The boys unanimously adopted the Junior Farmers' Associations' pins. As a committee had previously been appointed to wait on the agricultural society boards of the county to make arrangements for judging classes at each fair, it was decided that I should coach the boys a little before the fair season. Arrangements will be made at the September meeting for a class in this work.

"I made one small survey for ditches of about three thousand feet in Oakland. I also assisted one of our junior farmers in

planting his three acres of Grimm alfalfa seed. We are experimenting with four such plots in the county this year and have three other plots, two of which were planted last year and one in 1913.

"The record book shows that during the past two weeks we have received nineteen personal calls from farmers for information concerning tent caterpillars, wireworms, aphids, underdrainage, mustard spraying, treatment of potato scab, milk testing, fungous diseases of plums. We also made six visits upon request re similar questions. Also received a few letters and some telephone calls, making a total of twenty-nine during two weeks.

"The Jersey Breeders of the County have been discussing the organization of a Jersey Breeders' Club, and am writing circular letters to each breeder outlining this, and I expect will have a meeting in a few weeks for the purpose of organizing a Club."

SASKATCHEWAN NOTES

The Public Service Monthly for June gives the schedule for "The Better Farming Train" from June 14 to July 10th. The train consists of four sections in eight cars. The Field Crop section includes two lecture cars, one for reception and discussion and the other for demonstrations. Two cars are also devoted to Domestic Science, one for lecturing and demonstration and the other a nursery car where children will be entertained while their parents or guardians take in the other parts of the train. Poultry raising as well as cooking, sewing, home nursing, etc., will be a feature of this section. A general demonstration section consists of a car of models of farmsteads and farm buildings, showing methods of arrangement of fields, buildings and equipment. A special section is devoted entirely to boys and girls, in which illustrated lectures are given on western birds, habits of insects and other topics relating to the outdoor life.

The *Monthly* states that the thirteen creameries operated by the government during the winter of

1914-15 produced 255,805 pounds of butter against 234,858 pounds the previous winter, an increase of 20,947 pounds, or 9 per cent. Supplementing this information Deputy Minister A. F. Mantle in a letter to THE AGRICULTURAL GAZETTE says "The make for the first six weeks of the summer season, a period that ended June 12th, shows a still more gratifying increase, the figures for May being 156,100 pounds, against 139,600 pounds in May, 1914, an increase of 16,500 pounds, and for, June 1st to 12th, 135,000 pounds, against 99,200 pounds in 1914, an increase of 35,800; showing a total increase of 52,300 pounds, or 26 per cent. Since the publication of The *Monthly* creameries at Canora, in north-eastern Saskatchewan, and Kerrsbert, in west-central Saskatchewan, have been taken over. The Canora creamery opened for business on May 24th and the Kerrsbert creamery on June 21st."

The Stallion Licensing Board up to May 1st, 1915, had examined 1,349 heavy horses and 166 light horses, of the former 896 were Clydes-

dales, 317 Percherons, 60 Belgian, 35 Shires and 11 Suffolk Punch and of the latter 108 were Standard-bred, 25 Hackney, 12 Thoroughbred and 4 Coach breeds. Of the total examined 67 were rejected. The average

weight of the heavy horses was 1,656 pounds and their height 16 hands $3\frac{1}{2}$ inches. The average weight of the light horses was 1,120 pounds and their height 15.3.

BRITISH COLUMBIA

WOMEN'S INSTITUTES COMPETITIONS

THE Department of Agriculture has announced the following competitions for Women's Institutes:

COMPETITION No. 1

Prizes for institutes having the best average attendance at meetings during the year, based on membership as returned to the Department on the list dated June 30th, 1915. Books to form the nucleus of a library to the value of:—1st prize, \$30; 2nd prize, \$15.

COMPETITION No. 2.

Prizes for institutes having the best programme for 1915. Books to form the nucleus of a library to the value of:—1st prize, \$20; 2nd prize, \$10.

COMPETITION No. 3

Prizes for the best papers by institute members on the following specified subjects:—Five 1st prizes, \$10 each; five 2nd prizes, \$5 each.

- (a) How to organize hot luncheon in the schools.
- (b) Women's responsibilities to the Empire.
- (c) The development of home industries in British Columbia.
- (d) The possible influence of women's institutes on the life of the province.

COMPETITION No. 4

For junior members. Prizes for the best papers submitted by junior members, on the following specified subjects:—Five 1st prizes; five 2nd prizes. (Nature of award to be determined later.)

- (a) Our share in institute work.
- (b) A daughter's duty in the home.

The length of the essays are not to exceed two thousand words, and an average of fifteen hundred is declared to be preferable.

The programmes will be judged chiefly with a view to the merit of their arrangement and subjects of discussion for the year, although due

allowance will be given for general get-up and style.

NO PROVINCIAL CONVENTION

There is to be no provincial convention of Women's Institutes this year, but district conferences will be held towards the end of August as follows:

- Vancouver Island, at Victoria.
- Kootenay, at Nelson.
- Okanagan, at Salmon Arm.
- Lower Mainland, at Chilliwack.

The Department will pay transportation charges and a sum of \$3.00 per day for the expenses of one accredited delegate from each Institute. Other delegates can attend at their own expense, or at that of the institute represented.

The following subjects for papers and discussions at the conferences have been recommended by the Advisory Board:—

1. The duty of parents in respect to the medical inspection of school children.
2. What is eugenics? A plea for racial improvement.
3. Co-operation between producer and consumer.
4. Business methods for women.
5. Recreation for young people in rural districts.
6. The development of home industries in British Columbia.
7. Study courses for women's institutes.
8. The utilization of libraries in rural districts.
9. Opportunities for women in the twentieth century.
10. Privileges of women in the twentieth century.

The Department has arranged to print the programmes for each conference.

PART III

Rural Science

MATERIAL SUPPLIED TO BOYS' AND GIRLS' CLUBS AND RURAL SCHOOLS

Recently a request was sent to the Department of Agriculture in each of the provinces for a statement of the material that had been supplied this season to the boys and girls of the rural schools, to boys' and girls' clubs and to junior farmers' institutes, etc. Each province was asked to give:—

1. Classes and variety of material supplied.
2. Number of school fair districts to which each class of material was sent.
3. Quantities of each material sent to each district.
4. Conditions of distribution.
5. Brief reference to variations, if any, from distributions of former years.

The following summaries were received from the different provinces engaged in the work:

NOVA SCOTIA

BY L. A. DEWOLFE, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

THE Department of Education has supplied small quantities of seed and plants to children's clubs these last two years. In addition the Department of Agriculture has, this year, supplied about \$100 worth of eggs for hatching.

We have poultry clubs, potato clubs, strawberry clubs, garden clubs, and improvement clubs.

This year we have urged the pupils to buy their own seeds. Where the teacher believed that outside assistance would really advance the work, however, we have given rather sparingly, as follows:—

Eggs, two to four sittings to a school, total 300 sittings.

Strawberry plants, 50 to a child, 200 to a school, total 6000 plants.

Potatoes, one-half bushel to a school, total 20 bushels.

Oats, shrubs, seeds, etc., about \$40.00 worth (total).

In addition to the foregoing, the Experimental Farm at Nappan sent a three pound bag of potatoes to each rural science teacher. From the Farm was also sent samples of oats, wheat and barley.

Lack of funds prevented our being more generous than this outline shows.

MACDONALD COLLEGE

THE DIVISION OF CEREAL HUSBANDRY

BY PROF. JAMES MURRAY

THE material supplied from the Cereal Husbandry Department this year to school children consisted of 192 samples of Quebec No. 28 corn, 151 samples of Daubeney oats and 59 samples of Mensury barley. In the case of corn sufficient seed was supplied to plant a block of 100 hills, and of oats and barley sufficient seed for one one-hundredth of an acre.

The distribution has been in all cases in the hands of the Macdonald College demonstrators and the crop produced is intended for exhibition at the school fairs in the various districts. The demand for all three kinds of seed has been in excess of the available supply. The shortage in oats and barley has been usually made up by the demonstrators with good seed purchased locally, or from a seedsman. Unfortunately a supply of Quebec No. 28 corn is still not obtainable in commerce so that we have had to regulate the amount sent to each district by the amount available for distribution from this Department. Quebec No. 28 corn is a

pedigreed strain originated by the Cereal Husbandry Department of Macdonald College. It is a twelve-rowed yellow flint variety with small ears and remarkably early for such a high yielding grain variety. A few lots were distributed to school children in the spring of 1914, and last spring sufficient seed was distributed to plant 192 plots. The available supply was not nearly sufficient to meet the demand.

There have been few restrictions placed on those who received the seed. All who get free samples are required to exhibit part of the product at the school fair in the fall. They are also strongly advised, in the directions sent by the Department with the samples, to take good care of the produce of the plots to insure its being valuable for seed, and, in the case of corn to plant it at least forty rods from any other variety to prevent crossing. An effort has been made to impress upon them that the material they receive is valuable and will well repay any extra trouble they may bestow on it.

THE DEPARTMENT OF HORTICULTURE

BY PROF. T. G. BUNTING

THE Horticultural Department of Macdonald College distributed, during the past spring, flower and vegetable seeds to

school children in the province of Quebec, through the College demonstrators, as follows:—

DEMONSTRATOR	Address	Flower Seeds, Collection of Six Varieties	Potatoes, 10 lb. Lots	Tomatoes
J. K. King.....	Shawville	150	250	...
E. A. Lods.....	Cowansville	130	100	...
A. E. Raymond.....	Cookshire	60	170	30
A. F. Emberley.....	Ayer's Cliff	50	100	120
R. E. Husk.....	Huntingdon	140	170	70
C. H. Hodge.....	Richmond	125	50	40
G. W. MacDougall.....	Lennoxville	75	80	20
V. B. Durling.....	Lachute	70	50	75
Total		800	970	355

The flower seeds consisted of a collection of the following, two varieties of sweet pea, two of asters and two of phlox.

The potatoes consisted of a ten pound sample of Green Mountain or Irish Cobbler, being sufficient to plant a plot 20 feet x 20 feet. Last year one pupil secured a quantity from his plot equal to a yield of 540 bushels per acre.

The tomatoes consisted of a liberal packet of seed of either Bonny Best or Chalk's Jewel.

In addition to the above, fifty packets of melon seed, "Montreal type", were sent out and distributed where they were likely to be properly cared for, also fifty collections of

vegetable seeds, consisting of ten different varieties, were sent out for school gardens.

Complete directions for the culture of the flower and vegetable seed were sent out with the seed, so that each pupil will have at hand the information necessary for the planting of the seed and its care until the crop is exhibited at the school fair.

The department also assists the demonstrators in this work by giving as prizes, plants, such as strawberries, raspberries, bush fruits, and herbaceous perennials. It is thought that this is much more likely to keep up the interest and enthusiasm of the pupil than cash prizes.

THE POULTRY DEPARTMENT

BY M. A. JULL, B.S.A., MANAGER AND LECTURER

THE Poultry Department of Macdonald College has distributed, in 1915, 610 settings of hatching eggs to the children in the schools of the province. The distribution of the eggs was conducted by the college demonstrators located at Shawville, Lachute, Cowansville, Huntingdon, Richmond, Lennoxville, Ayer's Cliff and Cookshire.

The eggs were of the barred Plymouth Rock breed.

The number of settings distributed in each of the following districts was: Clarendon and Bristol 75, Chapeau, Sheenboro, Onslow, Chester and Allumette Island 70, Lachute 50, Hemmingford 13, Howick 33, Huntingdon 35, Cowansville 40, Bedford 26, Granby 3, Richmond 50, Lennoxville 50, Eastman 25, Ayer's Cliff 75, Cookshire 35 and Scotstown 30.

The conditions of distribution are included in the application blank which reads as follows:—"I beg to make application for one setting of

hatching eggs offered free by Macdonald College. I agree to do the best I can in caring for the eggs and chicks and I promise to show all of the chicks I raise from these eggs, but no others, at a fair provided for same.

"In return I offer Macdonald College the choice of one chicken from the flock. It is understood, however, that where five chickens or less are raised from one setting Macdonald College will not take a chicken."

The selection of the students to receive the eggs was made by the college demonstrators in co-operation with the principals of the academies and the rural school teachers.

A four-page pamphlet was given to the children receiving eggs, this furnished directions for the handling and care of the eggs, the choice and care of the hen, the construction of the nest, methods of marking the chickens and feeding.

ONTARIO

SUMMARIZED FROM REPORTS RECEIVED FROM THE DISTRICT REPRESENTATIVES

THE information received from the District Representatives in response to the request quoted at the head of this series of reports was varied and interesting. There were minor differences in the conditions of competition for prizes, but the character and quantity of seed supplied free to the pupils of the rural schools were very similar, generally consisting of:—

- | | |
|---|---------------|
| 1. O. A. C. 72 Oats..... | 1 lb. |
| 2. O. A. C. 21 Barley..... | 1 lb. |
| 3. Potatoes (Empire State, Irish Cobbler, Delaware, Green Mountain, Davies' Warrior)... | 3 lb. |
| 4. Sweet Corn (Golden Bantam, generally)..... | 1 oz. |
| 5. Field Corn (Wisconsin No. 7, Bailey, Longfellow, etc.)..... | 2 oz. |
| 6. Mangels (Giant Yellow Intermediate, Mammoth Long Red, etc.)..... | 2 oz. |
| 7. Eggs (Barred Rock or White Wyandotte)..... | 1 doz. |
| 8. Flowers (Sweet Peas, Asters, Phlox, Pansies, Gladioli, Nasturtiums)..... | Small package |
| War Plots (2 rods by 1 rod), seed potatoes | 10 lb. |

The produce of the war plots is to be sold and the receipts turned over to the Red Cross fund. In all cases one of the conditions of supply is that the products of the sown plot are to be exhibited at the school fair in the fall and that seed be saved for planting the following year. Each school was also expected to subscribe three dollars or more—and it was frequently more—to the school fair prize fund. There were few changes in the distribution this year from last, except that instead of the eggs being given free they were charged for at the rate of 25 cents a dozen, the proceeds being lumped and used for prizes.

The war plots were, of course, an innovation, but so well was the idea espoused that, taking the county of Dundas as an instance, it was esti-

mated that the plots in that district would yield 750 bushels, or upwards of a car-load worth somewhere in the vicinity of four hundred dollars. It is anticipated that the total yield from the war plots will be around 40,000 bushels, which, at 60 cents per bushel, will mean that \$24,000 will be turned over by the children of the province for the great patriotic fund. The Department, in recognition of the enthusiasm with which twelve thousand children have entered into the scheme, have decided to present the boy or girl in each county who produces the largest crops of potatoes with a silver medal.

Conditions for planting and cultivation and for the competitions were furnished in every instance and the children were required to work as much as possible without the aid of their parents. In many instances pupils are asked to select seed for next year's planting, and in several cases seeds were supplied for experimental purposes to young men who attended the short courses in agriculture.

It should be added that in every county or district distinct advancement has been made, the number of fairs, schools and pupils having been generally increased compared with previous years.

SCHOOL FAIRS, SCHOOLS AND WAR PLOTS

The following table gives the number of school fairs in each district, the number of schools embraced and the war plots sown. In five or six cases the number of schools included was not given in the returns. As regards the war plots, in one or two districts the idea was not acted upon, but in others that are not given in the table doubtless the plan was adopted, although the returns were not sent in.

DISTRICT	School Fairs	Schools	War Plots
Algoma	6	25	194
Brant	7	62	87
Bruce	7	68	384
Carleton	5	53	204
Dufferin	6	70	...
Dundas	4	60	540
Durham	6	73	212
Elgin	8	71	...
Essex	4	39	186
Frontenac	6	61	...
Glengarry	6	79	157
Grey	8	83	151
Haldimand	3	35	60
Halton	2	21	220
Hastings	5	50	130
Kenora	3	10	33
Kent	8	...	229
Lanark	6	56	...
Lambton	5	68	...
Leeds and Grenville	7	85	...
Lennox and Addington	10	...	...
Manitoulin	5	35	...
Middlesex	9	74	...
Norfolk	5	...	309
Northumberland	5	50	...
Ontario	9	77	60
Oxford	4	46	...
Peel	4	...	268
Peterborough	5	40	...
Port Arthur	4	14	46
Prince Edward	7	...	178
Rainy River	4	29	108
Renfrew	4	...	296
Simcoe	8	94	327
Thunder Bay	2	...	43
Timiscaming	5	25	...
Victoria	12	80	199
Waterloo	6	53	...
Welland	4	46	...
Wentworth	2	24	...
York	8	109	...
Total or province	234	1865	4621

For purposes of comparison it is interesting to note that last year the fairs numbered 148, the schools, 1,391 and the entries 75,602 against respectively as given above for this year, fairs 234, and schools 1,865. The attendance at the fairs in 1914 was 95,310 and the number of plots sown 23,872. The settings of eggs supplied free was 4,074 as compared with 6,722 this year at 25 cents each.

NUMBER OF PUPILS SUPPLIED WITH SEED AND EGGS

The following table gives the number of pupils who were supplied with each variety of seed and of eggs in each district:—

DISTRICT	Eggs	Potatoes	Oats	Barley	S. Corn	F. Corn	Mangels	Flowers	Vegetables	Wheat
Algoma	101	194	107	65	62	...	...	243	94	..
Brant	246	269	142	48	192	65	143	875	...	..
Bruce	264	424	...	...	180	90	180	460	...	..
Carleton	122	148	34	18	66	46	30	148	38	45
Dufferin	265	303	156	58	142	37	111	...	...	..
Dundas	202	264	89	38	175	65	143	438	...	..
Durham	225	265	106	32	183	61	86	197	...	..
Elgin	204	331	48	16	162	81	107	326	...	..
Essex	115	118	...	...	60	156	59	433	...	..
Frontenac	226	483	142	50	327	98	192	273	...	..
Glengary	238	638	232	205	356	142	347	393	...	..
Grey	289	358	146	63	173	54	126	179	187	..
Haldimand	90	161	39	12	48	17	68	146	...	..
Halton	80	...	36	9	50	16	59	189	...	..
Hastings (a)	134	194	66	20	130	52	...	233	...	..
Kenora	29	71	14	17	8	...	...	26	53	29
Kent	188	333	47	20	93	85	90	293	...	..
Lanark	216	197	92	52	172	145	122	212	133	..
Lambton (b)	96	...	76	31	86	195	...	185	166	..
Leeds and Grenville	264	267	109	49	*293	...	...	465	...	..
Lennox and Addington	339	372	46	26	129	83	86	316	...	..
Manitoulin	50	231	120	89	174	90	...	500	...	..
Middlesex	204	336	116	...	180	167	173	346	...	..
Norfolk	204	257	51	23	111	118	68	313	...	..
Northumberland	119	279	48	22	139	79	90	215	...	..
Ontario	255	432	92	43	235	53	167	592	355	..
Oxford	100	236	99	27	118	111	104	524	225	..
Peel	216	160	40	...	135	36	100	220	...	..
Peterborough	109	271	130	21	62	...	86	230	...	..
Prince Edward	241	586	183	107	126	217	219	...	...	35
Rainy River . . . . .	...	262	49	51	77	...	...	242	...	78
Renfrew	107	290	84	21	105	67	86	252	...	88
Simcoe	245	374	234	76	217	95	133	541	95	..
Thunder Bay	19	29	7	4	...	...	...	12	35	..
Timiscaming	44	155	53	23	...	...	37	167	63	70
Victoria (c)	93	286	202	...	462	367	391	1203	...	..
Waterloo	180	445	172	77	236	69	160	728	88	..
Welland	103	244	12	1	178	26	...	252	...	..
Wentworth	80	185	17	8	27	25	24	124	...	..
York	420	328	134	89	248	111	156	48	236	..
TOTALS	6722	10796	3570	1511	5917	3119	3943	12549	1768	345

*Both kinds of corn.

(a) Also 75 sainfoin; (b) also 75 bushels of potatoes; (c) also 300 Emmer.

The District Representative of Port Arthur makes returns in bulk for each township, the totals of the four being 52¼ pounds of barley; 65 pounds of oats; 983 pounds of potatoes; 113 ounces of corn; 34 ounces of turnips; 12½ ounces of

mangels; 34 packages nasturtiums; 67 packages of sweet peas; 27 packages phlox; 36 packages of asters and 50 dozens of eggs. In addition Port Arthur gave out 458 pounds of potatoes for war plots.

MANITOBA

BY S. T. NEWTON, SUPERINTENDENT OF EXTENSION SERVICE, AGRICULTURAL COLLEGE

TO-DAY the watchword in education is vocational efficiency.

The demand for more practical studies in the schools of the towns and cities has led to manual training courses being established, and later large technical schools being built and equipped with expensive tools and machines in order that the pupils may be better equipped for entering the industries.

Practical education is just as necessary in the country as in the city. In the country the tools and machines are the land and the things that grow on the land, and the Department of Agriculture considers that the best means of making provision for this practical training and of inspiring the coming generation with a love of agriculture, and raising the industry to a higher plane in the estimation of the people generally, is to supply a part of this equipment free to the boys and girls so that they will have something that is their own and something that is well worth taking care of.

To this end boys' and girls' clubs were organized under the direction of the Extension Service of the Agricultural College three years ago, and each successive year sees a vast increase both in the interest and efficiency of the work. The 1913 clubs had a membership of 850. Last year nearly 2,000 were enrolled and this year over 5,000 deeply interested and enthusiastic boys and girls are taking part in the various contests.

One of the conditions imposed in organizing the clubs is that the work must be done on the home farm or garden, but much of the organization is done by the teachers, and practically every other interest in the district is behind the boys and girls in their farming operations and is ready to help them both in the matter of suggestions and in making pro-

vision for attractive prize lists for the fall fair, for the fall fair is really the big day in the history of these clubs.

Each member knows all about the fine points not only of his own chickens, but of those belonging to his companions as well, and there are hundreds of separate pens throughout the province—chickens from the eggs supplied by the government last year—and the juvenile owners of these pens are taking particular care that the strain is kept pure.

The impetus given to fodder corn growing is most pronounced. It is seen growing now in all parts of the province, whereas a couple of years ago only a few patches were in evidence. To such an extent has it been grown and found satisfactory that the Engineering Department of the College is preparing plans for the construction of silos, as it is recognized that next year the demand will be particularly large in this respect.

Last year being an unfavourable one in some parts of the province, we are not able to make many comparisons in potato-growing, but we do know of over a score of cases where the plot tended by the boy or girl, and thus receiving extra cultivation, was the only supply that came safely through the dry season, and has proved a splendid lesson in the advantage of cultivation for the conservation of moisture.

Previously, the girls were obliged to compete with the boys in these contests if they wished to take part at all, and they held their own to a remarkable degree, winning a great many prizes with their poultry and potatoes, and even in the pig-raising contest. This year, however, special contests in bread-baking, sewing, canning and preserving have been added for the girls, and farm me-

chanics for the boys, making eight contests in which club members may engage.

Among the 5,000 members taking part this year, the popularity of the contests are about in the following order, chicken-raising 3600; potato-growing, 3,000; fodder corn-growing 2400; sewing 2200; bread baking 1800; farm mechanics 1100; canning and preserving 900; pig-raising 200.

The material supplied by the Department of Agriculture was as follows,—One setting of pure bred eggs to one member of each family; ten pounds of Carman No. 1 potatoes to each member; a quarter pound of each of the following varieties of Fodder corn: North Western Dent, Longfellow and Minnesota 13; a half pound each of beans and peas for the canning and preserving contests; plans for a dozen projects in farm mechanics, and note books in which a full account of the work done is kept.

From last year's winners a dozen boys were chosen as the nucleus of a Junior Canadian Seed Growers' Association. Sufficient second generation Marquis wheat was secured from Seager Wheeler's famous prize winning stock to seed one-third of an acre, and the Field Husbandry Department of the college has prepared careful instructions in handling not only this year's plot, but in summer-fallowing for next year's crop, and it is just possible that the methods suggested here will have a wider application on these farms.

Next year it is proposed to arrange for one acre contests of various kinds for the members of the clubs who reach a certain standard in this year's competitions, and to supply eggs only to the new clubs, as it is felt that this year's clubs will already have made a pretty good start in

raising poultry and will have their own supplies.

In the distribution of this material the Extension Service has been ably assisted by the club organizers and club secretaries throughout the province. In the majority of cases the club organizers are the principals of schools, but they declare that the extra work done by them in connection with the boys' and girls' clubs is more than made up for by the increased attendance and renewed interest taken by the pupils in their other work.

The fact that these contests are carried on on the home farm has made the clubs the connecting link between the home and the school. It has led the parents to see that the teachers are interested in the children outside of school hours, and in turn the parents have become more interested in the work of the school in school hours.

Wherever boys' and girls' clubs have been organized, the people are unanimous in saying that no movement has had a greater effect in arousing interest in better farming. By making membership in these clubs voluntary, encouraging a high standard of excellence, and insisting that the actual business of the club be conducted by the girls and boys themselves, they have seen that it is a business proposition as well as an interesting form of recreation. By giving them a working interest in the farm and an assurance that the products of these contests are to be their own, they have an interest in the home and in the farm that cannot be estimated in dollars and cents.

The success of the boys' and girls' clubs owes much to the members of the Agricultural College staff and to the Departments of Agriculture and Education for their co-operation, assistance and encouragement.

UNIVERSITY OF SASKATCHEWAN

BY W. J. RUTHERFORD, DEAN OF THE COLLEGE OF AGRICULTURE

ALTHOUGH our plans are not yet matured for assistance to work, the University has this spring sent out small samples to teachers writing in here and desiring seeds for school garden work. To eight schools we have sent the following seeds: 2 packages of Red

Fife wheat; 2 of Banner oats; 5 of Manchurian barley; 6 of Marquis wheat; 4 of Winter Rye; 5 of Victory Oats; 3 of Gold barley; 5 of Solo peas; 5 of Western Rye grass, and 4 of Grimm's alfalfa. We hope next year to give this phase of the work more assistance.

BRITISH COLUMBIA

BY W. NEWTON, B.S.A., PROVINCIAL SOIL AND CROP INSPECTOR

THE need for boys' and girls' clubs or like associations has been felt in British Columbia. No distinct clubs of this nature have as yet been formed, but a foundation has been laid by creating within our Farmers' Institutes a junior phase. The necessity of making use of the older members of a community to offer encouragement and suggestion to any boys' and girls' organization is apparent. The Department is thus making use of the executive of the Farmers' Institutes to assist in stimulating interest on the part of the boys and girls. Arrangements are now being made whereby the junior division of the Farmers' Institutes will be formally organized into clubs, although they will always have some connection with the Farmers' Institutes, unless it proves desirable that they should be distinct.

The work is confined to potato competitions again this year. Junior potato competitions were held by twenty farmers' institutes last year. The number has increased for 1915 which is a good indication that there is an increased interest in this work.

A bulletin containing a brief description of the approved methods of potato culture and the rules and regulations of the competition has been sent to each boy and girl entered in the competitions. In the same bulletin is a summary of last year's competition. We believe the publication of the results in this manner is a great incentive to increase the interest in the competi-

tion. Possibly it plays as important a part as the awards.

The awards this year are based on two scores, a field score and a score on a financial statement. The financial statement is submitted to us on card forms. These card forms when filled out by the competitors are simple statements of the expenses and receipts in handling the plots entered in competition. All competitors use the uniform tariff of charges contained on the card and the statements must be certified correct by a representative of the local Farmers' Institute.

Special provision has been made for awards at the Provincial seed fairs at New Westminster and Armstrong for harvested exhibits from the boys' and girls' plots. To encourage competition, all transportation charges are paid by the Department to the nearest Provincial fair. Provision has also been made that awards for harvested exhibits be given where local seed fairs are held by Farmers' Institutes.

Wherever possible, the opportunity is taken to talk to the boys and girls after awards have been given. Not only is the opportunity ripe to discuss the mistakes made and the lessons learned through competing, but this year the opportunity will be taken to discuss the introduction of other crops into the competitions. The value of organization on the part of the boys and girls themselves will be pointed out, and assistance will be given to organize.

SUMMER SCHOOLS FOR TEACHERS

The following are the announcements of the summer schools for teachers to be held in each of the provinces during July and August, 1915.

PRINCE EDWARD ISLAND

THE summer school for teachers opens July 12th and will last two weeks. Each teacher attending will be paid railway fare and a bonus of six dollars. Subjects are agriculture and nature study, drawing, singing and pedagogy. The best instructors available will be secured.

NOVA SCOTIA

THE summer session of the Rural Science Training School will be held at the Provincial Normal and Agricultural Colleges, Truro, N.S., 7th July to 5th August, 1915. The syllabus embraces agriculture, biology, entomology, botany, horticulture, zoology, chemistry, woodwork, nature study, mechanics, weather work, bird study, brush work, etc. The hours will be from 9 a.m. to 4 p.m., but extra time will be given if required to bacteriology, plant-diseases, etc. Field excursions will be conducted in connection with the work in botany, bird study, etc., and may be participated in by interested students whether enrolled in the courses or not. Tuition is free. Students who do satisfactory work will be recouped their travelling expenses and, if they do well in three subjects, will receive a cash bonus of \$10 and be presented with one or two helpful books or a year's subscription to two Nature magazines. Applications were to be in by June 30th. Various awards will be made to teachers ranging from \$15 to \$75.

NEW BRUNSWICK

TWO summer schools of agriculture will be held this year in New Brunswick under the control of the Minister of Agriculture, the Hon. J. A. Murray—one at Woodstock in the Fisher Vocational School, and one at Sussex in the Agricultural School building recently completed.

Practical work, either in the school laboratory, or in the open, instead of lecture and note taking, will be followed.

The full course includes two years' sessions with an interim winter reading and experimental course. The completion of the full course entitles students to certificates of competency.

Each year's work includes soil physics and chemistry, school gardening, plant propagation and botany, animal life, general nature study, farm arithmetic and book-keeping, farm mechanics (for men) and rural domestic science (for

women), and method of presentation of nature study and agriculture as school subjects in the elementary schools.

Not more than 32 students will be in any class where practical experimental work is carried on.

Already more than the full number the two schools are capable of accommodating have applied.

A competent staff of instructors has been appointed for these schools. Both open on July 14th and continue four weeks.

QUEBEC

SUMMER schools will be held at Macdonald College from 2nd August to 28th August, 1915, for nature study and courses in elementary agriculture, with supplementary courses in art and manual training. No fees are required. On being awarded a certificate for successful work each student will be allowed five cents a mile for travelling expenses and receive a bonus of \$15 out of funds provided by the

provincial government. All teachers who possess an elementary, model or academy diploma and are engaged in teaching in the province of Quebec are eligible. A nature study and elementary agriculture certificate will be awarded to those students who complete the course satisfactorily. The subjects included are: nature study, plant life, horticulture and gardening, animal life, manual training and art.

ONTARIO

SUMMER courses have been arranged for by the Provincial Department of Education with the Department of Agriculture, the Ontario College of Art, the University of Toronto and the Department of Militia and Defence, to start July 5th and end August 6th. The courses in physical culture which were held last year at London and Ottawa will not be repeated this year. The courses will be for:

With the Ontario Agricultural College, Guelph—Elementary agriculture and horticulture, Parts 1 and 2; intermediate certificates in agriculture, Parts 1 and 2; certificates in agriculture for teachers of household science and certificates in farm mechanics.

With the Ontario College of Art, Toronto—Elementary art, art supervisors, and art specialists.

With the University of Toronto—Elementary household science, Parts 1 and 2; elementary manual training; intermediate manual training; vocal music, commercial subjects, etc.

With the Department of Militia and Defence—Elementary physical culture, supervisors and specialists in physical culture.

Certificated teachers of different grades are eligible for the courses according to subjects. Applications were to be made by 8th June. Tuition is free to the agricultural course. Travelling expenses and the sum of \$20 are to be allowed to every teacher who satisfactorily completes a course leading to a certificate in agriculture.

Other summer short courses to be held at the Ontario Agricultural College were announced on page 447 of the May number of THE GAZETTE

MANITOBA

THE Summer School of Science and Handicrafts will be held in Winnipeg from July 6th to August 6th.

Courses will be given in the following:—

1. Elementary Agriculture, Nature Study and School Gardening.
2. Advanced Nature Study and School Gardening.
3. Elementary Bench and Forge Work.
4. Advanced Bench and Forge Work.
5. Elementary Light Wood Work and Wood Carving.
6. Raffia, Rattan and Clay Work.
7. Sewing.
8. Cooking.

Teachers who have received interim second-class professional certificates for this Province, or certificates acquired outside the Province, are required to take a course in the Summer School of Science, or, by special arrangement, in the Summer School of Handicrafts, as one of the conditions necessary to secure a

permanent certificate for the Province. The attention of such teachers is called to this provision, as in view of the present supply of qualified teachers it will be difficult to secure extensions of interim certificates, and therefore the necessary steps to secure permanent certificates should be taken promptly. Each student enrolled in the Summer School pays a fee of \$3.00 to cover the cost of material used. All other expenses over and above the amount of fees are paid by the Department of Education.

A short course in agriculture, prepared from the standpoint of the country clergyman, will be given at the Manitoba Agricultural College commencing August 2. In addition to the lecture course, which is being given by members of the college staff, there will be a conference for the discussion of the relationship between the country church and agriculture. Addresses will be delivered by social workers of national reputation.

SASKATCHEWAN

SUMMER courses for teachers will be held at the University of Saskatchewan, Saskatoon, and the Provincial Normal School, Regina, in agriculture, household science and music from July 14th to August 4th, 1915. There will also be a special course for teachers of science and inspectors of schools. Teachers completing a course satisfactorily will be allowed their return

fares. No fee is charged for agriculture. A charge of a dollar a day for board is made. Applications had to be in by June 30th and registration was required before July 14th. For household science one dollar must be deposited with the director, to be returned, minus the cost of any equipment destroyed, at the end of the course. For music a fee of \$5 is charged.

ALBERTA

SUMMER schools for teachers will be held at the University of Alberta, Edmonton, from July 5th to August 7th, 1915. Applications were required to be filed with the Department of Education on or before May 30th and registration was necessary on July 5th. Upwards of 400 applications were received, but only 350 could be accepted. Railway fares to and from Edmonton were allowed to those

teachers who satisfactorily completed the study of two subjects. A special course for teachers of science and agriculture in high schools was arranged to start July 15th and extend to the end of the regular course. The courses included all branches of agriculture, ranching, nature study, household science, manual training, woodwork and physical training.

BRITISH COLUMBIA

SUMMER courses for teachers will be held in Victoria High School from Tuesday, June 29th, to Friday, July 30th, 1915. The subjects of study will include: rural science and school gardening, art, vocal music and elocution, manual arts, manual training, household economics and English literature and French. Under the terms "rural science and school gardening" are included every branch of agriculture and nature study. Tuition is free and so is transportation to and

from Victoria. A per diem allowance of \$1 will also be made for living expenses providing attendance and work are satisfactory.

On June 23rd applications had been received from 220 teachers taking the first year rural science course and from 80 teachers for the second year work, making around 300 teachers gathering at Victoria this year for the study of agriculture. The total number of applications in all summer courses aggregate some 700 teachers.

The Page County (Iowa) schools had in five years been given a trend toward vocational training that had captured the imaginations of parents, children and teachers. I found in one of these schools a big boy writing laboriously on raspberry culture. Be it remembered that he was doing a lesson, not in horticulture, but in English—and he was doing it rather well.

"Why don't you write," I asked, "on some literary topic, like the poems I like best, or the paintings in the Louvre?" "Well," said he, "you see, I don't know anything about the Loov, and I don't read poetry very much; but I do know about raspberry culture. I am growing raspberries for the market." So he wrote about raspberries—just as Grant wrote about his campaign—in good, clear, terse English. It was a most excellent exercise in English and it was a really rural topic.

In mathematics these children had much better tasks to perform than to compute the number of revolutions the wheel of a cart would make in a journey from the earth to the moon, or to solve a problem in alternate alligation or in cube root. They made inventories of the farm property. They figured profits and losses on farm crops. They made tests of dairy cows and calculated profits and losses in individual cows. They had a little arithmetic book of their own, compiled by Miss Field (the teacher), and filled with strictly rural problems.—Herbert Quick, in "The Saturday Evening Post."

WHY SCHOOL GARDENS FAIL

NOVA SCOTIA

BY L. A. DEWOLFE, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

SCHOOL gardens, I think, fail
(1) Because the teacher lacks enthusiasm and the power of leadership with the pupils.

(2) Because she is not well-balanced; and lacks persuasive powers and leadership with trustees and parents.

(3) Because teachers in various departments of the same school fail to co-operate.

(4) The teacher's ignorance of gardening causes the children to lose confidence in her.

(5) The school grounds are often unsuitable, either on account of condition or in size.

(6) Loafers on the school grounds after school hours often do damage. Making the school ground a thoroughfare also causes trouble.

(7) Too much is attempted.

(8) The frequent change of teachers.

(9) "Who will do the work" is a puzzling question. Frequently, the matter of ploughing is left to the voluntary efforts of some good-natured man instead of having the work done in a business-like way at the section's expense.

(10) Lack of care in summer vacation is, perhaps, the greatest drawback.

(11) Procrastination is fatal. Ploughing, ordering seeds, and making plans are often left until planting time. Hurriedly and poorly prepared ground will never result in a good garden.

QUEBEC

BY JEAN-CHARLES MAGNAN, OFFICIAL AGRICULTURIST, SAINT-CASIMIR, PORTNEUF, QUE.

THE importance and utility of the school garden are fairly well understood by the school teachers of our province; however, too many promising school gardens, which were well started, have been neglected and abandoned later on.

This is much to be regretted. What are the causes of such failures? In our opinion, the causes hampering the school garden movement are the following:—

A. The object of the school garden is not sufficiently understood.

The teacher should know clearly the "why" and the "how" of the school garden if he or she wants to

achieve success. All teachers who desire to establish a school garden should first write to the Department of Agriculture for guidance and advice. The teacher must keep informed, if he wants this work to be really profitable to the pupils. The Department of Agriculture has for distribution a number of pamphlets and circulars on the establishment and care of the school garden.

B. There is a lack of understanding and co-operation between school trustees and teachers.

It is a fact that the teacher works alone. The school trustees do not understand that they can do a great

deal to help her. However, it is absolutely necessary that there should be good understanding between the two, otherwise the garden will not be successful. This is a weak point to which my attention has been particularly called this year during my visit to the school gardens. The school board should not forget that it has been established specially to supervise the teaching of the children of the parish, and to make sure that this teaching is given in accordance with the program. Therefore, the teacher who desires to establish and maintain a school garden in her school should be supported and helped by the school board.

C. Land poorly prepared.

In some schools the garden is abandoned after the first year; this is particularly the case of a good many gardens which were not well enough prepared. It is impossible to secure products of good quality on land that has not been sufficiently worked and that has not received a sufficient quantity of manure. The land should be ploughed and spaded; it should receive an application of farmyard manure and wood ashes. Chemical fertilizers may also be applied as a supplement to farmyard manure.

D. Some school gardens are too large.

How many teachers have lost heart because they undertook too much at first. I have seen school gardens 90 by 50 feet for schools which had only about fifteen pupils. The following year, the majority of these schools had given up their garden. When I would ask the reason for this, the teachers would invariably answer "Too much work." These teachers had made a mistake from the start. Let us always remember this principle:- The school garden must be proportionate to the school, to the number of the pupils and to the spare time of the teacher.

E. The teachers change schools too often.

Each year a large number of teachers leave school to work for another school board. In such cases too often the school garden is abandoned, as a new teacher is not always up in agricultural school work or does not care; this is to be regretted, and school trustees would help the movement very much by employing only qualified school teachers who would remain a long time in their school. From an educational point of view, the children would be the first to benefit by this move.

SASKATCHEWAN

BY A. KENNEDY, M.A., INSPECTOR OF SCHOOLS, WEYBURN.

DURING 1914 there was a marked increase in the number of school districts undertaking School Garden work. Much of this work has demonstrated its educational value and has been duly accorded its share of praise. Unfortunately, however, the results have not always been successful; in fact, teachers and pupils have had bitter disappointments and many discouragements. While some have had to admit defeat, one hesitates

to pronounce their work a failure, for often out of apparent defeat comes glorious victory; in many cases the work of 1915 will determine whether the experience was a success. There are so many opportunities for direct interest and inspiration, as well as for indirect influence, through the various subjects of the course of study, that one has difficulty in deciding when failure may be admitted.

Among the causes for disappointment and discouragement, if not failure, are the undertaking of too much work, the lack of fencing, the difficulty of getting water, destruction of the plants by gophers, frost, etc., neglect during vacation and the changing of teachers. Some of these difficulties are peculiar to the prairie and Western conditions. They are, however, also difficulties with which the farmer has to contend so that the boy, the future-citizen, may have an opportunity of experimenting on a smaller scale.

Many enthusiastic teachers make the mistake of undertaking a large garden, or attempting to cover a wide selection of plants, and fail to estimate accurately, the amount of work required in the later cultivation in the limited time at the disposal of the pupils. Prairie children, who live three or four miles from school, and often have to walk to and from school, cannot be expected to spend any considerable time in garden work outside of school hours. The result is too often a crop of vegetables allowed to go to seed, with weeds producing an even larger crop of seed. The educational value of such an experience is negative; thrift should be one of the products of garden work.

Prairie farms are seldom fenced and the school grounds also suffer similarly. While cattle are not permitted to run at large, school gardens have suffered destruction from chance visits of stray animals. There are other ways in which a fence would often afford protection to the plots on which the children have expended patient care.

The question of supplying the children with suitable drinking-water has given a great deal of trouble and has not yet been satisfactorily solved. It can be readily appreciated then, that the problem of providing sufficient water for the plants, offers no less difficulty. Again, this is a farmer's problem

which presents itself for solution at several stages in the crop season. It is only necessary to note the attention devoted to questions of irrigation and dry-farming to understand something of the magnitude of this problem. Of course a partial solution is often found in arranging for a cistern, dug-outs, etc., but even then the difficulty is not wholly overcome.

On the prairie the gopher is ever with us, despite energetic attempts to eradicate the pest. Many and many a time I have been told by teacher or pupil of the destruction of the garden by the visits of these creatures. During July and August hailstorms by day, and frost by night cause many disappointments, and against these there is little defence. However, the young citizen receives a lesson that may serve him in good stead in later life.

The vacation problem is not usually so acute in the rural districts as many of the schools decide upon the short vacation in summer, with the longer vacation in winter. The urban districts can usually make arrangements to have the garden cared for during the vacation.

Probably the factor that contributes most to the failure of school garden work is the changing of teachers. Unfortunately, there are three conditions, perhaps, peculiar to the prairie country, which account for the changing of the teachers so frequently; the period of operation of many of the rural districts does not greatly exceed 140 days per year; boards of trustees do not give sufficient attention to training and experience in deciding the amount of salary to be paid, many teachers for whom Provisional certificates have to be secured being offered the same salary as teachers with Second Class certificates; there is often a lack of encouragement and support as between trustees and young teachers, creating an atmosphere that does not tend to make for permanency in the position. The new teacher often

misses excellent opportunities of establishing a permanency by neglecting to complete the work undertaken and conducted up to the vacation.

The increase in the number of class-rooms having flowering plants and bulbs is most gratifying; this

phase of school garden work might well be extended as there are fewer difficulties to be met, and the transformation of the class-room amply repays all the time and trouble given to the care and cultivation of the plants.

BRITISH COLUMBIA

BY J. W. GIBSON, M.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

MOST people judge of the success of school gardens by the volume and excellence of the crops produced. Some teachers and school inspectors and most school trustees regard success from this standpoint. In so far as these material returns are the result of painstaking care and intelligent application on the part of the pupils just so far may we look upon them as evidences of success and no farther. In former numbers of *THE GAZETTE* this question of the truly successful garden has been fully discussed. It is quite possible to have a garden at school which would be a great failure from the standpoint of the average market gardener but a great success from the standpoint of an earnest teacher, whose pupils have had opened up to them through their work and study in the school garden new and wholesome interests, which are destined to lead them out into a larger life—a life full of thoughtful, purposeful activity, in which they will come to know and appreciate the beauties as well as the utilities about them.

On the teacher, more than on anyone or anything else, depends the success or failure of the school garden. The teacher may fail, through lack of interest or through lack of a real understanding of the meaning of the work. More often, however, the teacher's failure is due to inadequate preparation for the work, and consequently to mistakes,

bad management and bad methods of conducting the work. Experience in gardening is, of course, valuable, but the management of classes in the garden and the conducting of profitable lessons in both garden and class-room are things that an expert gardener might utterly fail in. How to make the most of the school garden, not for the growing of carrots and cabbages, as some might think, but as a part of the equipment of the school for the purpose of training and educating boys and girls, is something that most teachers must yet learn.

INFLUENCE ON SCHOOL WORK

Many teachers, not all, complain of pressure of work and the preparing of pupils for examinations and look upon the time spent in the school garden as so much time and energy expended which might have been used in "getting up" the work in the other school subjects. All such teachers naturally regard school gardening as so much "extra" work. No one who knows will say that school gardening does not mean extra work. Most teachers, however, will tell you that their pupils, as well as themselves, have found the garden work both interesting and recreative. The great problem then must be concerned with turning school garden interest and daily garden experience to account in the teaching of the formal subjects of the curriculum—arithmetic, reading,

writing, composition, drawing, etc. Some teachers are finding this quite possible, and are no longer complaining of the overcrowded curriculum.

In the next place school gardening will meet with variable success or failure so long as teachers change from school to school as frequently as at present. This great disadvantage will be minimized, of course, when all teachers are specially trained in the work. With the establishing of the teacher's residence and the increase of the percentage of male teachers in our schools something approaching permanency will result.

Lack of sympathy and co-operation on the part of trustees and rate-payers has in some cases prevented the establishing of school gardens, or has led to the abandoning of them. This opposition has almost passed away and we are glad to note that instead we now not infrequently find trustees and parents urging that school gardening and other agricultural studies be inaugurated in the schools of their districts. Only those people who do not rightly understand the meaning and purpose of the school garden will be found opposing it.

Some attempts at school gardening have failed for the simple reason that the conditions for gardening were unfavourable in the extreme. At the same time, people have been led to wonder at the excellent gardens that have been established

where such forbidding things as ash heaps, tin cans and burdocks held sway. Indeed, not the least value arising from school gardening is the experience gained in cultivating and bringing under control most refractory garden sites. Nevertheless, teachers and school boards would be wise in always selecting a piece of land for school gardening which in season can be made productive. In some cases, the labour and expense entailed in making and maintaining a garden have been very great, but, speaking generally, expense is not a frequent cause of failure in school gardening.

Finally, the long summer vacation offers some difficulty. A garden neglected throughout the months of July and August is a great disappointment. Such failure, however, is merely an evidence of bad management and of carelessness on the part of everybody concerned—teachers, pupils and trustees. Neglect of the school garden and school ground during the summer usually results from lack of interest and failure on the part of teachers and trustees to appreciate the real value of the work. The solution of the difficulty cannot be given in a few words. It has been more fully discussed in a former number of *THE GAZETTE*, but when modern educationists have finally decided as to what agencies are most worth while in the education of our youth our schools will not remain closed all summer and gardening will have an important place in the activities of young people during these summer months.

The boys and girls of to-day are the fathers and mothers of to-morrow, and upon them depend the future civic life, the prosperity, and the industrial standing of the state. Any educational regulation, therefore, the natural tendency of which is to draw the boys and girls, bred and born to the farm, permanently away from it, or the natural tendency of which is to draw the boys and girls, bred and born to other industrial pursuits, permanently away from them, instead of leaving them to their industrial pursuits, instead of leaving them to their natural inclinations influenced by physical conditions surrounding them, "to develop, dwell, and enter into the industrial pursuits of the neighbourhood or locality in which they were born," is radically wrong, not in harmony with the best interests of the people, and some way should be devised to remedy it.—*Report Vermont Educational Commission.*

THE SCHOOL GARDEN

ITS PURPOSE—ITS CARE DURING VACATION

BY R. P. STEEVES, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION FOR NEW BRUNSWICK

THE school garden represents in a large degree the attitude of the school toward outdoor instruction and community life problems. It is also the visible expression of the estimation of the people of the district of the value of education to increase productive industry. It stands for that side of education that dignifies manual labour under the direction of trained intelligence and a knowledge of scientific principles. It indicates that the people realize that there is a clear relationship between the instruction the schools afford and the improvement and development of local conditions, between what the children do at school and what they do in after life for the social and economic prosperity of the community.

A LOCAL INDUSTRY

In a consideration of this question we cannot afford to eliminate the fact that the school is largely a local industry, that it should seek to make life in the district where it is situated more prosperous and enjoyable. The school is a means toward an end. It exists for the near at hand first; it stands for better citizenship here and now. The school costs money, most of which is supplied locally. It is reasonable therefore to expect that it should not only furnish the children with general instruction and training, but that it should deal with agencies that directly help to develop the community, that are a part of its life and vigour, that deal with the natural resources, through which the pursuits of the people are made possible, which they must engage in, in order to live there.

I make a direct appeal to the rate-payers of every district in annual school meeting assembled. While together look over your school property. Are the grounds neat, tidy and attractive. Are they exerting an influence for good on the young people attending the school? Do they indicate thrift? Do they show that the people recognize substantial value in their local educational institution? Is that institution inculcating in the children a love of the home land, a sympathy with its pursuits, a purpose to use the knowledge gained to improve and develop local conditions, to increase its prosperity?

The school property is the only possession in which every resident of the district has a part. If it be of value every resident therefore should have an interest in its upkeep. In concrete form its appearance and condition voice public opinion. The school premises should be the pride of the community, a place where residents will be sure to take visiting friends. Where this is the case, there will be no two opinions about school ground conditions, their influence in the neighbourhood, or the people's appreciation of the sort of education that makes the inhabitants prosperous, contented and happy.

The school ground therefore should be ample in size, it should be neatly fenced, it should afford opportunity to the children for enjoyable recreation and exercise, it should include a cultivated area where physical and mental efforts combine for the development of the child for better local citizenship. We call this cultivated area a school garden. It is a

means to an end; it is a link between the period of life preparation and the activities of mature citizenship, between the school and the home.

This school garden is a laboratory or workshop, a piece of apparatus for practical education, revealing the value of the school to the life of the district. It will be found an aid not only in interesting children in practical pursuits, but also in cultivating in them an appreciation for the beautiful in nature and the power and desire to express such taste by ornamenting their homes and their surroundings.

SCHOOL GARDENS AN ATTRACTION

School grounds containing a well kept school garden will always be found more attractive, and, in all cases, other things being equal, such schools give better value to the community, a better education to the children who have greater interest in their work.

That during the summer vacation the school property should have a dilapidated, forsaken appearance is no credit to any community. It tends to make the young people lose interest in their surroundings. At a time when all nature is looking best, neglect and disorder at the spot that stands for local intelligence cannot but give a downward incline to thought and action among the younger portion of the population.

The idea is, therefore, that the school grounds should be a point around which the thought and effort of all residents should centre, and that here during the school vacation, from time to time on Saturday afternoons, or other convenient time, for social enjoyment, for community improvement the people should assemble with the pupils of the school. On the principle that "Many hands make light work," a short time would suffice to put the garden and the entire school ground in good shape, mow the lawn, clean the walks and destroy weeds about

the fence. The remainder of the time would be given to games and contests and social intercourse.

In many of our country sections to their great advantage Women's Institutes flourish. I feel sure their members in their districts would heartily co-operate in efforts of this character. Among the many parts the evening repast would be not the least entertaining. The ladies would gladly assume charge of such work. To assemble at four o'clock, spend the first hour and a half in labour, have the evening meal and spend remaining time until eight o'clock in games, might be the programme. Children, young people and heads of families all could participate with individual pleasure and profit.

Such a course of action would cause that the school garden need not be handed over to a paid caretaker, it would be a community investment for instruction and general improvement and pleasure. Public sentiment would be behind it. No one would be the poorer, in fact life in such a place would be worth more.

A PIECE OF APPARATUS

As the garden is a piece of apparatus for exemplifying and giving training every pupil should be a participant. Every effort made should have its purpose, should afford instruction. If the work be a task exacted of pupils, great difficulties will be encountered. If through child interest in life, in nature and doing, their interest is enlisted and the impelling power to act is from within each life, the effort is no longer a task, it is a pleasure. This is the real secret of success in school as in every phase of life. To accomplish the purpose of the work of preparation of the soil, of planting, of protecting, of observing varying conditions of cultivation, in a word, of winning success, the pleasure of vacation is enhanced by frequent visits at least weekly, to the school

garden, and giving the attention needed and recording observations. These records are to be submitted to the teacher at the beginning of the term in August and, together with the plot's condition, made the basis of a merit mark in Nature Study. This should be made a feature of school standing equal to that assigned to any other school subject. If 100 is a full mark for language, then 100 should be the full mark for Nature and Agriculture and at least one-half of this should be set for the practical work. If any other system of estimating values is used, then this same principle should govern.

MAGNIFY COMMUNITY LIFE

The more the pupil can be encouraged to keep in personal contact during vacation with his school garden plot, the more the people, parents, ratepayers and young people, can be induced to co-operate, the stronger the influence that will be exerted on the youth to magnify community life. People whose community life has been happy, bright and attractive in youth, and who have learned the secret of getting intellectual and moral values through their physical and social activities, will never in maturity lose the attachment to that locality or interest in its pursuits.

This is a direct call to teachers and pupils, to school trustees, to

ratepayers in school meeting assembled, to unite to make the school a paying investment for the community. The time needed will bring its own reward. Four hours spent out of every two weeks during July and August, as indicated in the foregoing, will pay the best interest in uplifting life in rural communities.

In these days when patriotic attachment to the Empire is being tested, it must be remembered that loyalty to our home community is the best guarantee of the broader national feeling. Moreover, to actively cultivate local loyalty will be found the best way to inoculate in the youth of our land that deep devotion to the principles of government and freedom for which the British Empire stands pre-eminent. Through the love we bear our homes and district, and the efforts we make to enhance and dignify their importance, we establish and fortify ourselves as patriotic citizens. By doing, we create appreciation and compel recognition.

Help yourselves, improve your homes, enrich true living by uniting to strengthen and benefit the school of your community.

NOTE:—The foregoing forms the text of a message sent to teachers and pupils, school trustees and ratepayers by the Director of Elementary Agricultural Education for New Brunswick, with the request that portions of it be read at the annual school meeting.—EDITOR.

Mr. S. B. Sinclair, of Philadelphia, speaking at a meeting of the Ontario Education Association at Toronto, stated that every school in Philadelphia has a school garden. In Dayton, Ohio, 1,700 children were given seeds to plant, and worked in 420 back-yard gardens.

"The most potent remedy for social and economic unrest is scientific, co-operative, intensive farming," said the speaker, "and the most natural and effective preparation for intensive agriculture is the school garden, including the schoolground demonstration garden, the city back-yard home garden, the boy farmer club for placing city boys on the farm during summer vacation, and other agricultural activities administered by school authorities and correlated with school work."

PHENOLOGICAL OBSERVATIONS BY SCHOOLS

BY A. H. MACKAY, B.A., SUPERINTENDENT OF EDUCATION FOR NOVA SCOTIA

FOR over twenty years the rural schools of Nova Scotia have been accumulating valuable phenological data for the future scientific students of climate, which serves the teacher as a stimulus to Nature Study, and stimulates pupils to be observers and collectors on their way to and from school, generally with the effect of making an otherwise monotonous journey an exciting excursion.

The schedules of observations are sent in by the teachers to the inspectors semi-annually with their returns. After annotation by the inspectors who are careful to see that each locality is clearly indicated, they are transmitted to the Education office, where the schedules are carefully bound in annual volumes and presented to the Provincial Science Library for safe keeping and reference.

This system solved a phenological problem which the Royal Society vainly endeavoured to deal with—the regular collection of phenological data. Scientific men in different parts of the Dominion promised to observe, note and report a series of phenological facts. Only a fraction persevered during the year. And even these reported phenomena as occurring too often in hebdomadal cycles corresponding to their weekly excursions.

In the rural school, the eyes of numerous children sweeping often over a radius of two miles daily in search of the *first* appearance were infinitely more prompt and accurate. As the specimens are taken to the school to undergo the scrutiny of the teacher before the observation is entered in the schedule, there is no chance of a mistake where there is a competent teacher. The schedules have been submitted to local spec-

ialists, whose comments and criticisms are published in the *Journal of Education* which is the official bulletin of the Education Department sent to each school.

Some general summaries of these annual observations have been published for many years by me as secretary of the Botanical Club of Canada, in the Transactions of the Royal Society of Canada, and of the Nova Scotian Institute of Science. The system has been introduced sporadically into the other provinces of Canada, in some schools of the United States, and more particularly of Denmark.

English phenological meteorologists adopted our method of noting dates by the use of the day of the year, which proves so very convenient for the calculation of average dates (phenochrons—see the New Standard Dictionary). Dr. Ihne of Darmstadt still uses the clumsy notation of "day and month". The "24th of May" is "144" with us and "24V" with the German phenologist.

Since the dissolution of the Botanical Club of Canada, the publication of these phenological observations has been taken up by the Meteorological Service of Canada. In the Transactions of the Nova Scotian Institute of Science, we still continue to publish the Provincial and District phenochrons.

Teachers find the schedules to be a great help in interesting their pupils in one line of their Nature Study work. The pupils are stimulated to observe by what is more a process of enlivening play than a formal study. And we are accumulating more phenological data in the province of Nova Scotia than is done in any other part of the world, and without any cost.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

COUNTY EXTENSION WORK IN SCOTLAND

THE following extract is taken from the third annual report of the Board of Agriculture for Scotland for the year ended December, 1914:—

The extension work of the three agricultural colleges, Edinburgh and East of Scotland College, North of Scotland College, and West of Scotland College was continued in a satisfactory manner in 1914, and the increases shown in the number of courses and lectures given, and in the attendances thereat, indicate a growing interest on the part of those whom they are intended to benefit. Instruction and advice was given by the organizers through the following agencies:—

- (a) Systematic classes, held at rural centres, in agriculture, horticulture, poultry-keeping, dairying, beekeeping, cooking, and rural domestic economy.
- (b) Courses of lectures or single lectures in the above subjects, and also in forestry, veterinary hygiene, and school gardening.
- (c) Conduct of field experiments and demonstrations, supervision of experimental plots, and preparation of reports on the results.
- (d) Visiting and advising small holders and farmers on agricultural matters, and making known the provisions of the Board's live stock schemes.
- (e) Acting as adjudicators in the competitions promoted by the Board for the best-managed small holdings and for the best crop of potatoes.

The staff of instructors numbered 58. The following statement gives an indication of the nature and volume of the work transacted by them in the course of the year:—

SYSTEMATIC COURSES

Number of centres.....	291
Number of meetings	3,327
Number of attendances.....	56,175

LECTURES AND DEMONSTRATIONS

Number of centres.. .. .	779
Number of meetings	1,978
Number of attendances.	62,500
Number of experiments	1,353
Visits to crofts and farms, to give advice.....	15,144

Valuable assistance was also rendered by the staffs of the agricultural colleges in connection with the following, amongst other schemes promoted by the Board:—

School Gardening.—An increasing number of teachers took advantage of the Board's scheme for encouraging the establishment of school gardens in the poorer districts of the North and West, and the Board have reason to hope that the operation of this scheme will result in a greater appreciation on the part of crofters and small holders of the benefits to be derived from the pursuit of gardening at their homes. In 1914, 350 schools were supplied with seeds and plants on the following conditions:—

- (1) That the older pupils in the school get practical instruction in gardening from the plots in the teacher's garden or as elsewhere provided, and be encouraged to apply such instruction at their own homes, where possible;
- (2) That the condition of the plots, etc., and the pupil's progress in gardening be, if practicable, subject to such tests or reports as the Education Department may require under Article 21 (b) of the Code. In any case the attention of the inspector

ought to be called to any effort, however simple, under this scheme of the Board. A very short report direct to this Board from the teacher himself at the end of the season will be welcomed. Special reference should be made to the effect of the instruction on the home circumstances of the pupils.

Advice and assistance in regard to the laying out and management of the gardens was also given to the teachers by the instructors of the colleges.

Potato Spraying.—The demonstrations organized by the colleges in previous years, at the request of the Board, to encourage the adoption of spraying in the Western Highlands and Islands were repeated in 1914, senior students of the Aberdeen and Glasgow Colleges being employed as demonstrators in conjunction with the college instructors for the districts. As in the previous season about 600 plots in all were sprayed. The reports received show that these demonstrations aroused much interest in the districts in which they were given, and appear to be serving their purpose in bringing home to crofters the advantages of spraying as a preventive of disease.

PRIZES FOR BEST-MANAGED SMALL HOLDINGS AND BEST CROPS OF POTATOES

Competitions for the best-managed small holdings were initiated by the Board in 1912, and in that year were confined to those areas in the congested districts in which crofters' shows were held. In 1913 the scheme was extended to include small holdings outside the crofting areas, and for this purpose separate competitions were arranged in the three agricultural college areas. For the purpose of this competition, the holdings in each district were divided into three classes as follows:—

- Class 1.—Holdings cultivated entirely by hand or spade labour.
- Class 2.—Holdings up to 15 acres (exclusive of outrun) cultivated by horse and other labour.
- Class 3.—Holdings above 15 acres (exclusive of outrun) cultivated by horse and other labour.

Several prizes were offered in each class for every district, and during 1914 the holders of first-prize awards in any pre-

vious year's competition were precluded from competing.

The reports of the judges add testimony to the educative value of these competitions. There is undoubted evidence that in a large number of cases progress has been made in the direction of better housing, improved methods of cultivation, freedom of the ground from weeds, and, in general, towards a sounder economic management of the holdings. While it may be admitted that these improvements have been effected by special efforts on the part of the small holders to obtain prizes in the competitions, it is to be hoped that the improved conditions which now obtain may be of a permanent nature. What is of greater encouragement still is the fact that even where the marks apportioned are lowest, a desire is being shown for more information from the college instructors and others as to the best lines on which to effect further improvement.

The entries received for the competition for the best crops of potatoes show an encouraging increase.

The number of show committees taking advantage of the scheme during 1913 was 27 with a total number of 276 competitors, while in 1914 entries were received from 44 show committees and a total number of 473 entered for the competition.

The competitors were again divided into two classes. In the first the crop was entirely cultivated by hand or spade labour with a minimum area of one quarter of an acre under potatoes, and in the second class horse and other labour could be employed, with a minimum area of half an acre. Competitors on the western seaboard and in the Western Isles were required to spray their potatoes to prevent disease.

The judges' reports are very hopeful and encouraging as to the effect this scheme is having on the intelligent cultivation of the potato crop. The outstanding feature in their reports is the educative value of the demonstrated efficiency of spraying, during a season like that of 1914, in preventing disease and in increasing the crop. In areas where spraying was not compulsory much loss was caused by disease.

Further stress is laid on the evidence that not only is a frequent change of seed essential, but also in almost every district a change of variety is imperative.

The crop results in the best districts are of a high standard and so uniform that difficulty was experienced in placing them in order of merit. In many cases a very intelligent use has been made of artificial manures in supplementing the farmyard manure made on the croft, thus producing

potatoes of a higher quality. The practice is not however, universal, and a more extended use of artificial manures is recommended.

One of the principal objects of the scheme however, is being rapidly attained, namely, that of bringing the college instructors more closely into touch with the crofters and increasing the useful sphere of work of these officers.

THE UNITED FARMERS OF ALBERTA

BY P. P. WOODBRIDGE, SECRETARY-TREASURER, CALGARY

THE combination of the seven hundred or more local unions, as they are called, into the "United Farmers of Alberta" was the result of a representative conference of the leading men connected with the various farmers' associations which had existed in the province of Alberta prior to January, 1909. At that conference it was decided that better work could be done by organizing a provincial association, with a provincial central office and board of directors, with which any farmers' association could be affiliated on payment of a nominal per capita affiliation fee of fifty cents for each member of the local branch. As suggested above, the number of these local unions or societies now affiliated with the provincial organization is over 700. Each local union retains complete freedom and the control of its own actions. It also elects its own officers, who attend to all the local business.

CONSTITUTION AND OBJECTS

The local unions of the United Farmers of Alberta bear no relationship to farmers' institutes and agricultural societies, all of which come almost directly under the supervision and influence of the provincial government; whereas the local unions affiliated with the provincial association appoint delegates in proportion to their membership, who attend the annual convention held in January of each year, when the report of the officers for the preceding year and resolutions suggested by the affiliated societies are received and discussed. The officers for the succeeding year are also elected at this annual meeting. It may be pointed out, however, that, generally speaking, farmers' institutes and agricultural societies are more progressive, and do better work, where the unions of the United Farmers of Alberta are active, as the work of the local union of the United Farmers of Alberta is largely of a nature which educates the farmer to take a greater

interest in these other organizations; in fact, the membership of the one is in many cases the membership of the other. It might also be pointed out that while there is no definite arrangement at present, the provincial Department of Agriculture recognizes the value of the local organizations of the United Farmers of Alberta, and is prepared, on request, to supply speakers on agricultural subjects, from its demonstration farms and agricultural colleges, to any of these affiliated local unions.

Each local society affiliated with the provincial association adopts the provincial constitution, but has power to adopt such bylaws for its own guidance as it sees fit, provided they are not contrary to the constitution itself. The objects and purpose of the association as set forth in the constitution are as follows:—

(a) To further the interests of farmers and ranchers in all branches of agriculture; to promote the best methods of farm business; to seek to enlarge and increase our markets; to gather market information; to obtain by united efforts profitable and equitable prices for farm produce, and to secure the best and cheapest transportation.

(b) To study and teach the principles of co-operation and to promote the establishment of co-operative societies.

(c) To watch, influence and promote legislation relative to the objects specified in the preceding sub-sections (a) and (b), and to advance any other matter affecting the farmers' business, and to take any legitimate action necessary for this purpose.

(d) To promote social intercourse and the study of economic and social questions bearing on our interests as farmers.

(e) To settle disputes between members without recourse to law whenever possible.

(f) To take into consideration any member's case of grievance, hardship or litigation, and to defend our members as far as it may be possible and just.

MEMBERSHIP AND OPERATION

The local unions of the United Farmers of Alberta vary in membership from 10 to 200 or more, and the territory which they cover varies in proportion. As a general rule, however, a radius of from six to eight miles around the schoolhouse in which the meetings are held is about the extent of the territory covered by any individual union. There are cases where for the purpose of a more economic handling of the business in which these unions are engaged, particularly trading or bulk purchasing, this limit has been considerably extended. The tendency to-day, however, is largely in favour of the smaller territory, for the purpose of securing better attendance at the meetings. In place of a large union of 200 members or more, we find the district association, which is a voluntary combination of two or more local societies under a district board consisting of representatives of each society in the combination.

The objects as given in the foregoing will clearly show that the ground which can be covered by these organizations is very great. Few at present have reached anything like their full development. The advance which has been made in many directions within the last two years, however, has been marked. The Cowley local union, for instance, is now engaged in so much work of one kind or another that it has been found not only possible but profitable to issue a special monthly bulletin, which is sent to each member of the local union, and contains a full account of what has been done in the past month as well as the programme for the succeeding month. This union holds cattle and horse sales twice a year. These are recognized as an important feature of local work, not only inside the association but also outside. Some \$13,000 worth of business was done through this sales department alone last year.

Throughout the winter the union meets twice a month. A strong agricultural programme is arranged and experts on various agricultural subjects are secured. Addresses by them are followed by discussion and questions. The members also engage extensively in purchasing their supplies, such as binder twine, fence posts,

lumber and other farm necessities. Nearly \$16,000 worth of business was done in this way in the year 1914.

The records also show that, while none of the local unions are exercising to the full the powers they possess, most of them are being put into practice, the districts for the most part carrying out those objects which seem most suited to the kind of farming being practised. Thus we find in the mixed farming districts of Alberta associations engaged extensively in the shipping of live stock on a co-operative plan. One such district shipped fourteen hundred head of hogs in one day, on which it was estimated an average gain of a dollar per head was made. In the grain growing districts will be found some of these associations which have established seed-growing centres for the purpose of securing high grade seed for the benefit of their members, and thereby raising the standard and quality of grain throughout the district. In some places efforts are being made to standardize the breeds and improve the quality of live stock in the same way. In a number of places this spring the collective credit of the members of the union was used for the purpose of securing from the local banks sufficient money to enable needy members of the association to purchase seed grain. Thus, in a small way, is put into effect the principle of community security for increased agricultural credit. One also finds, by no means infrequently, associations operating successful beef rings and egg circles.

WOMEN'S AUXILIARY ASSOCIATION

The association provides for farm women to become members, but for the most part the custom has been for the women to organize as auxiliaries to the local associations. This phase of the movement has so far advanced that at the annual convention of the Women's Association last January, the women also organized as a provincial unit, electing their own executive and calling themselves "The Women's Auxiliary to the United Farmers of Alberta." Each of the local auxiliaries has full privileges in the men's association, and takes an active part, particularly in egg circles and similar work. In addition they take up matters more intimately connected with the home life, and improved social conditions, work which is badly needed in many parts of the prairie provinces.

CO-OPERATION IN SASKATCHEWAN

THE first annual report of the Co-operative Organization Branch of the Saskatchewan Department of Agriculture is of an instructive nature. It outlines the work of the branch from its inception in September, 1913, to the close of the year 1914, and in doing so shows in a marked manner the progress the co-operative movement is making among the agricultural and other communities in the province. Owing to the success achieved by the Saskatchewan Co-operative Elevator Company, the government resolved to do all that could be done to extend the movement and consequently created the Co-operative Organization Branch in September, 1913. Under The Agricultural Co-operative Association Act passed at the meeting of the legislature in the same year, five or more farmers can organize, and, on payment of a fee of \$4.50, can become incorporated for purposes of production, marketing and purchasing on co-operative principles. The act, which is designed for operation under the jurisdiction of the Co-operative Organization Branch, also provides for the appointment of a registrar, whose duty is to prepare a set of standard by-laws to govern every association coming under its provisions.

The first association to register under the Act was the Juniata Co-operative Association, the objects of which were set forth as to produce, purchase and sell live stock, farm products and supplies. At the date of registration there were eight shareholders, the authorized capital being placed at \$10,000, divided into 400 shares of \$25 each. Other associations were organized in quick succession until at the end of last year 113 had been registered.

At the time the report went to press, 102 associations with a membership of 2,850 had sent in returns. Their total paid-up capital was \$13,494.20 and their assets \$37,337.53, while their total liabilities amounted to only \$29,717.13, showing a clear balance to the good on the year's transactions of \$7,620.40. The average amount of authorized capital is \$6,843.13 and the par value of the shares is \$23. The total value of the farm supplies handled was \$239,320.42 and the value of the live stock sold was \$42,034.22. The variety of goods in which there was dealing was very wide, including binder twine, lubricating oils and gasoline, car-loads of fruit, flour, feed, wood, coal, etc. A typical purchasing organization is the Davidson Co-operative

Association. With an authorized capital of \$5,000 in 500 shares of \$10 each and only \$335 paid up, this association between April 14th, the date of its formation, and December 31st, handled 27 cars of coal, 6 of cordwood, 6 of lumber, 1 each of fence wire, fence posts, apples and potatoes. The savings by co-operation is indicated by the fact that coal was sold at \$1.82 per ton less than prices previously charged and shingles at \$1 per thousand less. In every article dealt with there were similar savings.

In live-stock marketing the advantages of co-operation proved equally as pronounced as in purchasing. Car-loads of stock are made up by the shareholders and forwarded to the larger market centres, where competitive bidding is assured. By this method expenses are curtailed, sales are more certain, consumer and producer are brought in closer communion, the small producer obtains the same price as the larger, and members are benefitted by the friendly rivalry that is aroused. An illustrative instance is found in the experience of the Hanley Farmers' Stock Shipping Association, which, being the first organized with a capital of \$500, divided into 250 shares at \$2 each, and only a paid-up capital of \$42, shipped during the last nine months of the year 15 car-loads of stock to Winnipeg with a saving in transportation and a profit in price.

The report gives valuable suggestions regarding the future, deals with the successful grading and marketing of wool, and, under the heading of "Other Co-operative Enterprises," tells what has been done with creameries. The first co-operative creameries started in Saskatchewan, then a territory, were three established in 1896, when Dr. James W. Robertson was Dominion Dairy Commissioner. Progress was not rapid and in 1905, when the province was granted autonomy, the number had only been increased to six. Following the establishment of the Provincial Dairy Branch the succeeding year there was considerable development. At the end of 1914, thirteen creameries were in operation under the direct supervision and direction of the Provincial Dairy Commissioner, who conducts all transactions.

Co-operative elevators and hail insurance are other methods which are prosperously carried on under the Co-operative Organization Branch.

QUEBEC HOMEMAKERS' CLUBS

The second annual convention of Quebec Homemakers' Clubs was held at Macdonald College on June 15th and 16th. These organizations correspond in purpose and work with Women's Institutes in several of the other provinces. They differ, however, in their organizations, inasmuch as they were formed by the women themselves unassisted by the government. These clubs are confined to the English-speaking counties. The first in the province was formed at Dunham in January, 1911, and there are now thirty active clubs in the province. The constitution provides for county organizations and branch clubs. In three counties, Missisquoi, Pontiac and Compton, county executives have been organized. The other counties having clubs are Shefford, Sherbrooke, Chateauguay, Huntingdon, Ottawa, Wolfe, Stanstead and Argenteuil.

Macdonald College has, from the beginning, taken an active interest in this work and, with one exception, a member of the staff was present to aid in the organization of each club. An officer of the College, Miss Frederica Campbell, whose services are provided for under THE AGRICULTURAL INSTRUCTION ACT, is the club demonstrator. Miss Katharine A. Fisher, head of the School of Household Science, supervises the work.

At the convention there were forty-one delegates present, representing twenty-one clubs. Macdonald College provided board, lodging and other entertainment to the delegates during the two days of the convention. In addition to papers on the educational needs of farm women, medical inspection of schools, the rural school and other topics, an address by Principal Harrison of Macdonald College, and musical numbers, reports were read from the various branch clubs.

The membership of the clubs runs from about twenty-five to fifty, and has reached six hundred and thirty-three in the province. Meetings were held by all of them throughout the fall, winter and spring months, to study and discuss

"The most scientific way of conducting home work in order to economize, strengthen and preserve the health of the family; to discuss the best expenditure of money in order to secure the highest conditions of home life; to provide better financial, social and intellectual advantages

for farm boys and girls and yet keep them on the farm; to carry on any line of work which has for its object the welfare of home or community life."

The number of lectures and demonstrations given by the demonstrator was fourteen at club meetings and fourteen during the January short courses. Seven additional lectures and demonstrations were given by other members of the household science staff of Macdonald College, besides two lectures and demonstrations by members of the staff of the school of agriculture.

In addition, a large amount of patriotic and relief work was carried on. One club (Cowansville) provided the community with a series of high-class concerts, by which they raised \$370, which was used for patriotic and relief work. Other clubs raised corresponding amounts in other ways and practically all the clubs provided a large amount of clothing and other comforts for the soldiers and people in distress. Other work consisted in assisting school fairs, introducing sewing into the public schools, beautifying school grounds, providing drinking fountains in public schools, etc. A number of the clubs took up the study of textiles, Canadian birds, literature and such practical subjects as sewing, curing meats, canning fruit, cooking, sweeping and dusting, etc.

Many of the delegates expressed their appreciation of the circulating library provided by Macdonald College, consisting of bulletins, pamphlets, magazine clippings and books.

The following resolutions were discussed: (1) That the Department of Education be approached on the subject of the care and beautifying of school grounds and their surroundings: (2) That the Minister of Education be approached on the subject of compulsory education and free books, not for the majority, but for those who are not in a position to bear the expense of the books: (3) That the Minister of Inland Revenue be approached on the matter of the inspection of clothing and footwear, asking that a government stamp be the guarantee that the goods are as represented: (4) That the secretary of the executive correspond with the secretaries of the clubs and institutes of the other provinces to learn what they are doing in regard to this matter.

UTILIZATION OF VACANT LOTS

THE movement having for its object the utilization of vacant lots in cities and towns is spreading rapidly and this year has made distinct progress. Among the towns heard from is Chatham, Ont., whence the chairman of the Conservation Committee writes that the committee has advocated the planting of corn or potatoes because the caring for these crops will free the vacant land of weeds. All the vacant land owned by the city has been seeded, cultivators generally being given the crops for their labour. Prominent citizens have taken similar steps, although in instances early enthusiasm has faded. Efforts are also being made to get the Grand Trunk Railway Company to beautify its property, particularly in the neighborhood of the station. Divisional Superintendent Crombie thought something might be done in the way of planting ornamental shrubbery. A Horticultural Society that has recently been formed in Chatham is doing good work in advancing the beautification of the city as well as in the utilization of vacant lots.

Hamilton, Ont., has 225 vacant lots under cultivation and subject to the management of the executive of a Garden Club. Potatoes and cabbages are the principal crops, but carrots, turnips, beets and other vegetables are also being grown. City Clerk S. H. Kent says that he is very pleased with the success attained, this being the club's first year. The Public Park Board placed a large piece of ground, which it was intended to turn into a park, at the disposition of the club. This was converted into 125 lots, each approximately 40 feet by 160 feet, and this is now one immense garden. In front of each lot has been placed a sign, reading "Garden Club, Lot No.". "Citizens," adds Mr. Kent, "have been very generous in placing the use of vacant lots at the disposal of the committee and I think that next year we will have no difficulty in doubling the membership of the club."

Calgary, Alberta, has organized a Vacant Lots Garden Club which has nearly a thousand lots under cultivation, the bulk being planted in potatoes, in the cultivation of which the district has hitherto been rather deficient. There has, however, been a deal of garden stuff sown, reports Mr. Alexander Calhoun, chairman of the Garden Club. Encouragement is also being given by the aid of competent gardeners, in the growth of borders of flowers. A prize competition in potatoes and other vegetables between boys and girls has been arranged. Citizens generally are taking an interest in the movement. A leaflet issued by the Garden Club states that the membership is \$1 and the cultivation charges another dollar, although members can prepare their own lots if they prefer. A lot has 25 feet frontage and a depth usually of 130 feet. Two lots ready for planting can be had for \$3. Members get a discount from dealers in seeds and garden tools on presentation of membership card. They also receive expert advice and bulletins free. Prizes are to be offered for the best gardens. If the lots are not taken proper care of, weeds being allowed to grow, the executive have power to sequester them. The motto of the year is "Better Alberta Potatoes."

Medicine Hat, Alta., has a Garden Club, organized in February of this year. Several hundred lots have been put under cultivation. The rules of the club are very much the same as those of Calgary. A committee of ten leading citizens have charge of the movement to which the Mayor, aldermen, superintendent of city parks, and members of the Board of Trade are lending all the aid they can. The secretary of the club, Mr. R. Quinlan, states that little difficulty has been experienced in securing all the lots required, citizens generally approving of the scheme. At present the club is confining its efforts to vegetable gardening, potatoes being preferred. It is intended at a later date to take up the matter of beautification.

GARDEN PLOTS ON ST. ANDREW'S CHURCH GLEBE LAND,
OTTAWA

THE garden plots referred to in the June number of THE AGRICULTURAL GAZETTE under the title of "Vacant Lot Gardens in Ottawa" are attracting a deal of attention in Ottawa. It is believed that much good is being done by throwing this land open to people who

desire to make gardens. As previously stated, no fewer than one hundred and twenty-eight people have plots on this property. Nearly all have shown much enthusiasm and have done good work on their plots. In the few cases where those who selected plots in the beginning had not

shown sufficient interest, the plots were taken from them and given to others, there being such a demand for the plots that the Committee in charge did not wish to have them remain vacant during the summer.

On Saturday, June 19th, the minister of St. Andrew's Church, Dr. W. T. Herridge, addressed the people who were working the plots and gave them words of encouragement practically promising them the use of the plots for next year.

A patriotic garden competition for a series of prizes was also announced. This differs only slightly from the competition described on pages 210 and 211 of the March number of THE AGRICULTURAL GAZETTE. Mr. M. B. Davis, Assistant in Pomology in the Horticultural Division of the Central Experimental Farm, will act

as judge.

Five prizes ranging from five to twenty dollars, have so far been donated, two of which will be awarded for the best plots of mixed vegetables and three for the best plots of potatoes. The judging of the gardens has been arranged to take place in June, July, August and September, points being awarded as follows:

For Mixed Plot—

Assortment and Succession of	
Vegetables.....	50
Method of Planting.....	25
Cleanliness and Neatness.....	25

For Potato Plot—

Cleanliness and Neatness.....	50
Uniformity.....	25
Condition of Tops.....	25

AGRICULTURAL EDUCATION IN BRITAIN

AS in other countries, so in Great Britain the absolute independence of agriculture in matters of education has passed. Year by year the debt the state owes to the farmer is being more and more recognized. Habits and customs are both changing. Up to comparatively recent years no special effort was made by state or municipality to rear the son in the avocation of the father. It was taken as an axiom that the heir apparent would follow in the footsteps of his male parent, and that the leased farm would go on from family to family as long as the burdens of rent and taxes could be met. Agriculture was seemingly of little more account than any other line of business. Every tub must stand on its own bottom was the maxim. Now there is an upheaval, if not as great as that in the United States, or as of as much prominence as that in Canada, it is equally as important, and, in a measure, equally as progressive.

Regulations somewhat similar to those that govern the administration of the AGRICULTURAE INSTRUCTION ACT of Canada have recently been issued for new grants in aid of agricultural education and research. These grants are made to approved institutions for the purpose of providing instruction in agriculture, forestry and horticulture of an advanced type. Supplementary grants are also made to selected colleges that make a study of agriculture. An advisory committee has been formed, members of which will visit the institutions in receipt of grants and advise the Board of Agriculture on the

progress that is being made. Three objects are in view in the new regulations, first, to aid on an increased scale the expenditure of those local authorities whose work has hitherto been aided by relatively small grants; second, to provide a uniform system of awarding grants; third, to link up the higher and lower forms of agricultural education.

The regulations are also intended to equalize the charge upon ratepayers in different counties by taking into account the whole of the work and expenditure of local authorities on agricultural education on a uniform basis. The Board of Agriculture takes the view that one-third of the local expenditure should be regarded as the minimum contribution by the ratepayers in each county, that the second share in the expenditure should come from the State in the form of the residue grant, and that the remaining third should be derived from the Board's grant. In fixing the minimum qualifying contribution for a grant, the Board will take account of the character of the agricultural instruction provided and the net expenditure incurred by the agricultural education committees. The view is also taken that the requirement of a definite contribution by ratepayers to the college will not only lead to a closer association of the county agricultural staff and the staff of the college, but will also provide the institutions in question with the means to extend their work in directions which are likely to prove of benefit to the locality.

EXPERIMENTS IN SASKATCHEWAN

MR. R. McLaren, who, for several years, has been giving attention to the growing of hardy alfalfas and clover in the province of Saskatchewan, and who won first prize for alfalfa seed at the provincial seed fair last winter, gives, in the following letter, the results of his experiments with these crops: "On June 6th, 1914, I sowed 20 acres of Grimm's alfalfa (Lyman's strain) on deep back-setting, well worked down, principally with a float to get a smooth surface and a very fine seed bed. The seed, which was inoculated with Farmogerm, germinated in three or four days, and in three months my stand of alfalfa was over three feet high; after taking a crop of seed off it last year, it has come through the winter in excellent shape. I crossed and angled the field this spring with an alfalfa cultivator, which produced rapid growth and served to remove all weeds and grass. Until 1914 my experiments with Siberian alfalfas were confined to several hundred plants of three varieties, namely, *Cossack*, a hay variety with flowers similar to the Grimms, but lighter in colour, as a rule. This proved to be a very strong growing plant with very heavy foliage and a heavy seeder. *Semipalatinsk*, this is a yellow flowered tall growing plant, with falcate or cycle shaped pods, that when ripe, will shell a large percentage of seed in the ground. This variety will some day be valuable as a pasture plant, as it is a dry land plant and the shelling of the seed will perpetuate it for all time. The *Obb* alfalfa seems to be the hardest of the lot, but the leaves are very fine and numerous, and it is inclined to be of a prostrate or creeping nature, shelling a great part of its seed when ripe. The seed of this variety is small and of different colours.

The seed of these hardy alfalfas is very hard, and should be treated by freezing or mixing with coarse sharp sand, and put into a strong bag and pounded before sowing; this injures the outer hull or shell, allows water to penetrate the seed and thus hastens germination, but of the two methods, freezing of the seed is to be preferred.

I have about five acres of four different varieties of Siberian alfalfas, from which I expect considerable seed this year; they have wintered well and I have already

harrowed them twice and intend going over them again with the alfalfa cultivator.

RED CLOVER

The Siberian red clover I have was brought over from Siberia in November, 1913, by Neils Hansen, who is known as the 'Alfalfa Explorer,' from whom I was fortunate in securing 8,000 seeds. In May, 1914, I sowed these seeds in my garden in very moist soil, but as I had not taken the precaution to treat the seed in any way only about five per cent germinated; I was careful, however, to pull out all the weeds, keeping the ground in good condition, and this spring I believe all the remaining seeds in the soil germinated and are now coming on fine. This serves to demonstrate that all hardy legume seeds coming from a northern climate are very hard and need to be treated before sowing to get the best results, or be sown in the fall of the year, so that the frost will work on the seed and cause it to germinate early in the spring.

WHEAT

I also secured 100 grains of Mongolian wheat from Hansen that had been growing in Siberia with success for a number of years. I planted them in my garden also; the cut worms destroyed 25 plants, and from the remainder I threshed out 21 pounds of seed, which I have again planted, and if it increases at the same rate as last year, I will have enough to sow 2 acres next year.

This wheat is of a fine colour and very large and hard; I sowed it last year on the 15th of May and cut it on August 14th. The heads are very long and big, each ear having five kernels, but the only objection I have to it is that it is bearded; the straw is very strong and grows about as tall as Marquis.

MILLET

I also sowed about an ounce of Siberian Proso or millet; this is very productive and is also a dry land plant, which I believe would do well in Southern Alberta, when there was a failure of hay crop. The seed is large and is recommended for hogs and chickens. From the ounce I sowed I threshed over a peck of seed, so you see it is very productive. The seed is white."

AGRICULTURAL COLLEGE GRADUATES

The following list gives the names and positions of the 1915 graduates from the Canadian agricultural colleges and the School of Agriculture, Ste. Anne de la Pocatière, Quebec:—

NOVA SCOTIA AGRICULTURAL COLLEGE

- | | |
|---|---|
| Congdon, Harris, Dartmouth, at home. | McKenzie, A. W., Bedford, N.S., at home. |
| Crosby, Aaron, Yarmouth, assistant at Lawrencetown Creamery. | McKenzie, J. M. F., Coxheath, C.B., Assistant Agricultural Agent, C.B. counties, N.S. |
| Dunleavy, Henry, Dominion, C.B., Assistant in Poultry Department, Nova Scotia Agricultural College. | McDonald, Percy G., Upper Dyke Village, at home. |
| Eldridge, L. W., 199 Boylston St., Brockton, Mass., working on a farm in Mass. | Notting, Errol, Dartmouth, at home. |
| Fuller, Albert S., Yarmouth, at home. | O'Neill, Geo., Searsville, N.B., at home. |
| Findlayson, D. K., Grand River, C.B., at home. | Redmond, Athol, Dartmouth, at home. |
| Frier, Arthur M., Shediac, N.B., enlisted. | Retson, William, Truro, N.S., Head Herdsman Nova Scotia Agricultural College. |
| Griffiths, G. T., Mt. Forest, Ont., not reported. | Schurman, D. C., North Bedeque, P.E.I., at home. |
| Holman, Douglas, St. John, enlisted. | Stanford, Miss Pearl, Dartmouth, at home. |
| Humphrey, A. E., Apohaqui, N.B., Assistant in Drainage Dept., Nova Scotia Agricultural College. | Sutton, J. S., Nappan, at home. |
| Holmes, Clarence, Avonport, N.B., enlisted. | Sweeney, J. R., Melrose, N.B., Assistant Dairy Department Nova Scotia Agricultural College. |
| Huddart, John, New Glasgow, at home. | Taylor, Eldon, Little Shemogue, N.B., at home. |
| Melanson, J. T., Comeauville, N.S., at home. | Trueman, H. L., Truro, on Nova Scotia Agricultural College Farm. |
| Machum, Donald, St. John, N.B., at home. | Wood, Leslie, Carter's Point, N.B., at home. |
| McAulay, F. L., Lower Millstream, N.B., at home. | Weldon, Arthur H., Dartmouth, enlisted. |

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE

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|--|---|
| Gosselin, Louis Alfred, B.S.A., Horticulturist at the School of Agriculture of Ste. Anne de la Pocatière. | vincial Government in the drainage work done in the province. |
| Dionne, François, foreman of the Cured Meats Department (bacon industry), at the School of Agriculture of Ste. Anne de la Pocatière. | Paquet, Alphonse, assistant to Mr. J. C. Magnan, Agriculturist, county of Portneuf. |
| Belzile, Romuald, employed by the Pro- | April, Nolasque, works on his father's farm at Saint-Hubert, county of Témiscouata. |
| | Jean, Ulric, Amqui, county of Matane. |

MACDONALD COLLEGE

- | | |
|---|--|
| Boyce, George Coonley, Athelstan, Que., Assistant, Macdonald College Demonstrator, Ayer's Cliff, Que. | King, James Hayes, Sussex, N.B., Assistant Macdonald College Demonstrator at Cookshire, Que. |
| Evans, Harry Insley, Hampton, N.B., at the European war. | McCormick, James Hugh, Barbadoes, B.W.I., at the European War. |
| Hodgins, Ellard Lee, Portage du Fort, Que., on home farm. | McKechnie, Richard Edey, Wyman, Que., at the European war. |

- McOuat, John Egbert, Lachute, Que., Macdonald College Demonstrator to Rural Schools of Quebec, Macdonald College, Que.
- McOuat, Leonard Christie, St. Andrews East, Que., Assistant Macdonald College Demonstrator, at Lennoxville, Que.
- Mitchell, Homer Dean, Drummondville, Que., at the European war.
- Presley, Fred Young, 256 Ferry Street, Malden, Mass
- Ricker, Earl Malcolm, 45 Fairmount St., Malden, Mass.
- Roy, Harold Bower, Sabrevois, Que., District Representative, Ontario Department of Agriculture, Sudbury, Ont.
- Russell, Charles, 400 W. 121st St., New York, N.Y., on home farm.
- Sadler, Wilfred, Assistant, Bacteriological Department, Macdonald College, Que.
- Taylor, Andrew Gilmore, Dewittville, Que., on home farm.
- Westbrook, Lawrence Jay, Morganville, N.Y., Assistant Macdonald College Demonstrator, Shawville, Que.
- Williamson, Harold Freeman, Ste. Anne de Bellevue, Que., at the War.
- Durling, Vernon Beckwith, Lawrenceville, N.S., Macdonald College Demonstrator at Lachute, Que.
- MacDougall, Winfred Gregor, Tatehurst, Que., Macdonald College Demonstrator at Lennoxville, Que.

ONTARIO AGRICULTURAL COLLEGE

- Beatty, H. A., enlisted, First Universities Company.
- Bell, W. J., Department of Agriculture, Charlottetown, P.E.I.
- Bligh, R. D. L., Department of Agriculture, Kentville, N.S.
- Burrows, L. F., Horticultural Branch, Department of Agriculture, Victoria, B.C.
- Campbell, A. M., enlisted in South Africa, home address Berea, Durban, Natal.
- Colquette, R. D., Rural Publishing Co., Peterborough, Ont.
- Cory, A., enlisted, Second Canadian Contingent.
- Crawford, H. G., Field Assistant to Provincial Entomologist, O.A.C., Guelph.
- Creelman, J. M., Dominion Cold Storage Plant, Grimsby, Ont.
- Croskery, W. M., farming, Kinburn, Ont.
- Culverhouse, P.E., Assistant Representative, Department of Agriculture, Burlington, Ont.
- Cumming, R. E., Assistant Representative, Department of Agriculture, Orangeville, Ont.
- Donald, F. C., Assistant Representative, Department of Agriculture, Hamilton, Ont.
- Donaldson, R. W., enlisted, First Universities Company.
- Dustan, A. G., Field Assistant to Dominion Entomologist, Bridgetown, N.S.
- Finn, R. A., Assistant Representative, Department of Agriculture, London, Ont.
- Foyston, B. E., Field Agent, Department of Physics, O.A.C., Guelph.
- Francis, J. F., Poultry Farming, cr. J. Fitzsimmons, Walkerville, Ont.
- Freeborne, S. G., Assistant to Secretary, Grain Growers' Grain Co., Winnipeg, Man.
- Frejd, D., Drainage Expert, Department of Agriculture, Toronto, Ont.
- Goodman, F. L., Horticultural Branch, Department of Agriculture, Victoria, B.C.
- Gordon, E. G., farming, Elora, Ont.
- Gray, A. J., home, Plaza del Ray 7, Cartagena, Spain.
- Hales, J. P., Poultry Department, O.A.C., Guelph.
- Hall, E. R., Assistant Representative, Department of Agriculture, Markdale, Ont.
- Hampson, E., Agricultural Field Agent, Commission of Conservation, Ottawa.
- Harris, A. G., Horticultural Experimental Station, Vineland Station, Ont.
- Hart, E. W., enlisted, Second Canadian Contingent.
- Hinman, R. B., Assistant Representative, Department of Agriculture, Aylmer, Ont.
- Hogarth, E. G., Farm Manager, Rae Estate, Scarboro, Ont.
- Holmes, H. M., farming, Raymond, Alta.
- Horobin, H. P., farming, Cornwall-on-Hudson, N.Y., U.S.A.
- Kedey, W. M., enlisted, First Universities Company.
- Kerr, W., Assistant Representative, Department of Agriculture, Perth, Ont.
- Laird, D. G., Analyst, Chemical Department, O. A. C., Guelph.
- Locke, W. A., Assistant Representative, Department of Agriculture, New Liskeard, Ont.
- Manton, G., florist, Eglinton, Ont.
- McQueen, M. J., farming, Elora, Ont.
- Mucklow, G., cr. W. Fernie, Box 308, Victoria, B.C.
- Neff, E. F., farming, Hamilton, Ont.
- Neilson, J. A., Assistant Representative, Department of Agriculture, Petrolia, Ont.
- Nourse, C. B., enlisted, Princess Patricia's Canadian Light Infantry.

- Paterson, F. C., District Representative, Department of Agriculture, Huntsville, Ont.
 Pawley, N. H., Department of Agriculture, Regina, Sask.
 Peren, G. S., enlisted, Second Canadian Contingent.
 Ponton, J. N., home, Bromptonville, Que.
 Robb, O., Horticultural Experimental Station, Vineland Station, Ont.
 Sackville, J. P., Department of Animal Husbandry, O.A.C., Guelph.
 Sands, D. R., Investigating White Pine Rust in Ontario, Headquarters, O.A.C., Guelph.
 Shipton, J. C., enlisted, Firs. Universities Company.
 Smith, D. M., home, 85 McPherson Ave., Toronto, Ont.
 Steckle, H. S., farming, Strasburg, Ont.
 Stratford, R. K., home, Brantford, Ont.
 Tawse, W. J., Dawson Elliott Commission Co., Toronto, Ont.
 Townsley, W. A., enlisted, Second Canadian Contingent.
 White, W. R., farming, Myrtle Station, Ont.
 Winslow, J. H., Canada Fruit Co., Moose Jaw, Sask.

MANITOBA AGRICULTURAL COLLEGE

- Lohr, Lester V., District Representative, Neepawa, Man.
 Wiener, W. T. G., District Representative, Morris, Man.
 Smith, Nelson, District Representative, Killarney Man.
 Danielsson, H. F., District Representative, Arborg, Man.
 Stone, W. J., District Representative, Dauphin, Man.
 Betts, William, Agricultural Secretary, Department of Agriculture, Regina, Sask.
 Brown, J. L., Agricultural Secretary, Department of Agriculture, Regina, Sask.
 Bjarnason, S. A., Horticulturist, Dominion Experimental Farm, Brandon, Man.
 Dunlop, S. F., Assistant Agriculturist, Department of Agriculture, Victoria, B.C.
 English, H. O., Instructor in Soils and Crops, Department of Agriculture, Victoria, B.C.
 Irwin, J. F., Assistant to the Superintendent, Demonstration Farms, Department of Agriculture, Ottawa.
 McIntyre, H. H., Department of Agriculture, Edmonton, Alta.
 Milne, Basil C., Assistant to the Superintendent, Experimental Farm, Lacombe, Alta.
 Muckle, Robert M., Inspector of Apiaries for Manitoba, Department of Agriculture, Winnipeg.
 Sirett, John E., Instructor in Agriculture, Manitoba Department of Education.
- Of the following, all are now engaged in farming, and it is the purpose of the majority to continue in this pursuit:
- Barker, Willis R., Okotoks, Alta.
 Green, J. H., Boharm, Sask.
 Harkness, William, St. Agathe, Man.
 Hicks, W. H., Souris, Man.
 Hudson, Harry, Brookdale, Man.
 Hutton, James W., Redvers, Sask.
 Lothian, J. F., Pipestone, Man.
 MacWilliam, William E. C., Mount Royal, Man.
 Ramsay, Emerson C., Bladworth, Sask.
 Richardson, Charles D., Grenfell, Sask.
 Robson, Leslie W., Deleau, Man.
 Stevens, Eric H., Bladworth, Sask.

There is no calling quite so honourable, independent, or where the avenues are so remunerative as farming. It is an indisputable fact that the farmers of the country have a higher average of wealth than any other class of people. Farmers do not think enough of themselves. Because they are farmers they think they are only farmers, and they forget the fact that if there is any one man who should hold up his head as one of the aristocracy of the land, it is the farmer. What other class of men have the same independent life? You can commence work and quit whenever you like. If you want to quit for half a day you can do it. At the same time you have an opportunity to live on the very best of the land at the actual cost of producing it.—*Hon. Jas. S. Duff, Ontario Minister of Agriculture.*

SOCIETIES AND ASSOCIATIONS

SASKATCHEWAN STOCK GROWERS' ASSOCIATION

The annual convention of the Saskatchewan Stock Growers' Association was held at Moose Jaw on June 10th, 11th and 12th. There was a large attendance of delegates. The following resolutions were adopted after full discussions:—

"The convention next year to be held at Swift Current on Wednesday and Thursday in the second week of June."

"That the Provincial Government be requested to appoint a Live Stock Marketing Commission to solve the marketing end of the Live Stock Industry in Saskatchewan:—1st to inquire into and study the needs of stockmen; 2nd to submit a solution; 3rd to appoint a permanent commission to put the solution into effect and if possible co-operate with other western provinces, and that when the Royal Commission is seeking for information every member of this association is requested to attend the most convenient session of said commission and assist by giving all possible information on the subjects in inquiry."

"That this association authorizes the executive to immediately and seriously consider the appointing of a market expert whose duty it shall be to secure and place at the disposal of the members from time to time or at request full and reliable information as to prices of all classes of stock, available markets, and such other information of a like character as may be deemed advisable."

"That we, the Stock Growers' Association in convention assembled this 10th day of June draw the attention of the Dominion government to the quantity of sale horses that are ready for purchase for war

purposes in western Canada and request that if at all possible arrangements be made at the earliest possible date for a very vigorous policy of purchase being established."

Following are the officers elected:—

Hon. president, W. G. Ogle, Wood Mountain; president, Ole Olafson, Mortlach; vice-president, J. H. Grayson, Moose Jaw; secretary-treasurer, J. D. Simpson, re-elected; Directors at large, T. Bonneau, Willow Bunch; Jack Byers, Valjean; Joe Wylie, Maple Creek; W. H. Kirkaldie, Gerrowville, and Max Hauser, Wood Mountain.

At the annual meeting of the Western Stock Growers' Association, recently held at Medicine Hat, it was decided to apply to the Western Live Stock Union for affiliation. The Western Live Stock Union is largely composed of members of Record Associations living in Western Canada and are therefore, as a rule, breeders of pure bred stock. The Western Stock Growers' Association represents not only the original range cattle men, but also the breeders and raisers of commercial live stock, more particularly cattle. Following are the officers elected: Hon. Presidents, Hon. Martin Burrell, Hon. Duncan Marshall; president, John H. Spencer, Medicine Hat, Alta.; first vice-president, Dr. J. G. Rutherford, Calgary, Alta.; second vice-president, J. L. Waters, Tees, Alta.; executive committee, Messrs. W. Huckvale, A. P. Burns, James Mitchell, E. O'Connor, J. H. Wallace, George Lane, G. McElroy, George Mackie, D. J. McMillan, Duncan Clark, David Cargill, A. E. Cross, T. Neuman, J. A. Young and Fergus Kennedy. The secretary is H. W. Ireland of Medicine Hat, Alta.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF BOTANY

Medicinal Plants and Their Cultivation in Canada, by J. Adams, M.A., Assistant Dominion Botanist; Bulletin No. 23, Second Series; Division of Botany. Mr. H. T. Güssow, Dominion Botanist, in an intro-

ductory letter explains that the reason for the preparation of this paper is furnished by the number of enquiries received regarding the medicinal properties of certain plants. Mr. Adams, who was formerly a lecturer on Botany and Vegetable Materia Medica at Dublin, Ireland, has gone thoroughly into his subject. In the course of 60 pages, including a most exact index, the Bulletin deals with around five hundred plants or species of plants. Their properties and habitations are described

and their uses set forth. Some hundred and twenty outline illustrations supply means of identification. For those who require further information than is contained on the Bulletin a list of obtainable publications is given.

THE ENTOMOLOGICAL BRANCH

Cutworms and Their Control, by Arthur Gibson, Chief Assistant Entomologist; Bulletin No. 10, Entomological Branch. The destructiveness, habits, history and varieties of one of the most ruthless pests known to agriculture are in this 32-page publication fully and adequately described. After a brief summary referring to the prolific nature of the worm, to its habits, the extent of the damage it causes and the best manner of its repression, Mr. Gibson proceeds to deal with the nature of injuries, with the natural enemies of cutworms, preventive measures, and the fifteen or twenty different species. Plentiful illustrations of the development and methods of the creature make the Bulletin complete in its instructiveness.

The Hessian-Fly and the Western Wheat-Stem Saw-Fly in Manitoba, Saskatchewan and Alberta is the title of Bulletin No. 11 issued by the Entomological Branch. Mr. Norman Criddle, Field Officer, is the author. The Bulletin is divided into two parts, the first treating of the Hessian-fly, and the second of the Wheat-stem Saw-fly. Of the one Mr. Criddle says "The Hessian-fly is an insect that has taken enormous toll from the farmers of North America, the aggregate amounting to many millions of dollars," and, of the other, "of recent years the loss by this pest has been quite severe in portions of the Prairie Provinces, though the insect has not always been recognized." Those two quotations are sufficient to indicate the importance of this 23-page Bulletin, which describes the history, characteristics and destructiveness of both pests, at the same time telling how their presence can be identified and the methods of suppression that should be adopted.

Seasonable Hints, No. 2, July, 1915. Perhaps the most valuable hint in the second number of this seasonable publication, issued under the auspices of the Experimental Farms, is the suggestion that trained men, who between them cover the entire length and breadth of the land, are waiting to study and advise on any problem relating to agriculture that is submitted to them. *Seasonable Hints*, which can be had free on application to the Publications Branch, Department of Agriculture, Ottawa, gives a list of the principal officers at Ottawa and all of the farms, stations and sub-stations in the country, to the superintendent of each of which

questions can be addressed. The contributors to the July number are: Director Grisdale and Messrs. E. S. Archibald, Dominion Husbandman; F. C. Elford, Dominion Poultry Husbandman; W. L. Graham, Field Husbandry Division; M. O. Malte, Dominion Agrostologist; H. T. Güssow, Dominion Botanist; W. T. Macoun, Dominion Horticulturist; F. W. L. Sladen, Apiarist; F. Charlan, Dominion Tobacco Specialist; Frank T. Shutt, Dominion Chemist, and J. F. Watson, Chief Officer Extension and Publicity Division.

THE FRUIT BRANCH

Fruit Growers of the Dominion of Canada, proceedings of the Fourth Conference, held at Grimsby, September 2nd, 3rd and 4th, 1914; 113 pages. An almost verbatim report of the proceedings at the conference, there is here to be found a vast fund of information on the fruit prospects and situation of Canada. Following the brief, opening business-like speech of the Dominion Fruit Commissioner, Mr. D. Johnson, who was in the chair. Mr. George E. McIntosh, Traffic Expert of the Ontario Fruit Growers' Association, delivered an address on "Transportation applied to Fruit" which led to an illuminating discussion, during which Mr. J. A. Ruddick gave some statistics regarding fruit importations to Great Britain and the exportation of dried and evaporated apples from Canada. Great Britain's importations of apples from Germany, the Netherlands, Belgium, France and Portugal reached a million or a million and a half bushels during a period of five years, and of pears something very little less. Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, spoke on "The Pre-cooling of Fruit," Mr. A. E. Adams, Secretary, United Fruit Companies, Nova Scotia, on "Systematic Co-operation in Nova Scotia," the late Mr. Robert Thompson, on "Marketing of Fruit," Mr. Elmer Lick, Oshawa, on "The Fruit Marks' Act," and Mr. F. W. Broderick on "Fruit Conditions in Winnipeg and the Canadian West," and Mr. Robert Thompson on "The Standardization of Packages." Discussions followed in each instance and resolutions founded thereupon were passed. The Honourable the Minister of Agriculture for the Dominion attended and delivered a brief address, in which he expressed regret that a pressure of affairs prevented him spending that time at the conference that he would have liked.

Fruit Crop Report No. 1. The important announcement is made in this Report, that, starting on August 1st, the Fruit Commissioner's Branch will publish telegraphic reports of the immediate fruit situation.

These reports will be received at least twice a week by telegraph from competent men in all the large producing and marketing centres in Canada and Great Britain. They will be sent to any one requiring them by mail immediately on receipt, or by wired night letter to those willing to defray the cost of the same. Application must be made to the branch directly. Report No. 1 is dated May 20 and deals with the prospects at that time.

THE PUBLICATION BRANCH

Flax Fibre, Pamphlet No. 1. This pamphlet describes briefly flax culture in Canada, the method of handling flax at the mill of The Canadian Flax Mills Company, St. Catharines, Ontario, and contains also a description of the Flax Scutching Process and Plant at Goderville in France.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

PRINCE EDWARD ISLAND

The Year Book of the Province of Prince Edward Island recently issued provides a fund of information regarding the industries and trades of the Island. It shows remarkable progress in fox farming and considerable advancement in the dairy and poultry industries. The first egg circle was formed on March 18, 1913. Up to the end of that year business amounting to \$14,190.11 had been done by the egg circles, which had increased in number to eleven. From the spring of 1914 to the end of February, 1915, the value of shipments made by the egg circles, which then numbered 62, amounted in value to \$230,000. Five egg candling and grading stations have been established under the control of the Prince Edward Island Co-operative Egg and Poultry Association, formed in 1914 for the general government of the circles.

NOVA SCOTIA

The Report of the Secretary of Industries and Immigration for Nova Scotia for 1914 shows that in ten years the province has had marked development. The report goes comprehensively into the advantages offered by Nova Scotia to settlers and into the value of co-operation to the farming community. It also details the successful working of the measure passed in 1912 entitled "An Act for the Encouragement of Settlement on Farm Lands."

Annual Report of the Department of Agriculture. The Annual Report of the Secretary for Agriculture, Nova Scotia, for the year 1914, takes 423 pages, with

illustrations, maps, diagrams and tables. The Report is composed of three parts, the first devoted to a review of the season as regards crops, live stock, etc., and to reports of the various officers of the Department and of the College of Agriculture, the majority of whom hold dual positions as heads of divisions of the Department and as instructors in the college; the second to a report of the Superintendent of Agricultural Societies, Associations and Exhibitions, and the third to a series of articles on Poultry Raising in Nova Scotia, edited by J. P. Landry, Provincial Poultry Superintendent.

The Report testifies to the progress of the College of Agriculture and to the good effect the short courses are having.

The number of live stock in the province is given as: horses 67,688; milch cows 138,534; other cattle 161,300; sheep 217,698; swine 57,817; poultry 1,082,632. There were held during the year 215 official public meetings with an average attendance of 59. The number of agricultural societies at the end of the year was 227, having increased from 160 in 1907. The first Women's Institute was organized in July 1913. In December, 1914, the number was 36. The number of entries in the field crop competitions was 326 against 291 in 1913 and 137 in 1912. Thirty per cent more butter was manufactured in Nova Scotia creameries in 1914 than in 1913, which showed 49.8 per cent over 1912. The increase since 1910 has been 360 per cent.

No fewer than 170 pages of the Report are devoted to the poultry industry, Mr. J. P. Landry, Manager and Lecturer of the Poultry Department, having collected a volume of statistics and information showing what various provinces have done and what might be done, by Nova Scotia in particular. Papers to this part are contributed by Professor M. A. Jull, Macdonald College, Quebec; Mr. Seth Jones, Superintendent of Poultry for New Brunswick; Mr. T. A. Benson, Dominion Poultry Representative for Prince Edward Island; Mr. F. C. Elford, Dominion Poultry Husbandman; Mr. W. B. Crowell, Arcadia, Yarmouth County, N.S.; Mr. J. P. Landry; Professor W. R. Graham, Ontario Agricultural College; Mr. C. H. Higgins, B.S., D.V.S., Pathologist, Health of Animals Branch, Department of Agriculture, Ottawa, and Mr. A. W. Foley, Edmonton, Alta.

"Don'ts for Beginners in Poultry Keeping," from the Cyphers Company Service Bulletin, might prove profitable reading for breeders. A directory of poultry breeders in Nova Scotia closes the report.

Part three of this report has been published as a separate bulletin.

NEW BRUNSWICK

Report on Horticulture, Province of New Brunswick, 1914; a complete review of the situation in every county of the province by A. G. Turney, B.S.A., Horticulturist, R. P. Gorham, B.S.A., first Assistant Horticulturist and D. B. Flewelling, B.S.A., second Assistant Horticulturist; 47 pages with illustrations.

QUEBEC

A Preliminary List of the Insects for the Province of Quebec, Part II—Diptera (two-winged flies), compiled by Albert F. Winn, Westmount, and Germain Beaulieu, Ottawa, has made its appearance as a supplement to the 7th Report of the Quebec Society for the Protection of Plants, 1915. It is explained in the introduction that the society published Part I—Lepidoptera, in 1912. Part II makes a pamphlet of sixty pages and gives the varieties arranged according to families, of which there are exactly fifty represented in the province of Quebec.

The Ninth Announcement of Macdonald College (McGill University) covering the college year of 1915-16 was recently issued. The first term of the School of Agriculture begins September 27th, 1915, and ends December 18th, 1915. The second term begins January 3rd, 1916, and ends for the first and second years on April 22nd and for the third and fourth years on May 20th. The first term of the School for Teachers commences September 2nd, 1915, and ends December 18th; the second term begins January 3rd, 1916, and ends June 8th. The first term of the School of Household Science begins September 7th, 1915, and ends December 18th; the second term begins January 3rd, 1916, and ends June 8th. Short courses in Animal Husbandry, Cereal Husbandry, Horticulture and Poultry will be held at different centres in the province in January and February, 1916, the exact dates of which will be given in a special circular. Short courses in Household Science will be held from September 21st to December 18th, 1915, from January 3rd to March 17th, 1916, and from March 20th to June 8th, 1916. A short course in dress-making will be held from January 3rd to March 17th, 1916. Application for the announcement should be addressed to the Principal of Macdonald College, Ste. Anne de Bellevue, Que.

ONTARIO

"Home-Made Septic Tank for the Disposal of Farm Sewage" is the title of an article by J. W. Stark, B.S.A., that has been reprinted in circular form by the Peel County Branch of the Ontario Department of Agriculture. A subject is here dealt with that should receive the widest possible attention.

The Report of the Women's Institutes of the Province of Ontario, 1915, Part II, contains the Superintendent's announcement of the summer series of meetings extending from May 26th to July 13th. It also gives a list of the lecturers and the subjects with which they were to deal. Provision was made for demonstrations by local authorities in judging live stock.

The announcement is made by the Fruit Branch of the Ontario Department of Agriculture that a circular will be issued each month in the year dealing with orchard operations and other fruit topics of uppermost importance at the time. The first of the series dated May, Vol. 1, No. 1, deals with the necessity of thinning apple trees. Early apples, the circular says, promise a good crop but, generally speaking, a light crop is likely. Pears promise well. Plums and peaches promise heavy crops. A good crop of cherries is also anticipated.

Natural Swarming of Bees and How to Prevent It, by Morley Pettit, Provincial Apiarist; Bulletin 233, Fruit Branch. There are three great problems in bee management, states Mr. Pettit, namely Brood Diseases, Wintering and Swarming. The first two, he says, are very real and the third comes home to every beekeeper whether he realizes it or not. Mr. Pettit proceeds to urge the importance of business methods and the necessity of being master of the situation. While bees require less frequent attention than other live stock, what attention they do need they require systematically and thoroughly. He advises making one day Apiary day and adhering to it. Mr. Pettit gives the causes of swarming and tells how to recognize its approach. He explains how to prevent it and dwells upon the importance of having a good queen. The essentials, he says, of swarm control are room, ventilation and shade, given in time; also a good young queen of a non-swarming strain. Illuminating illustrations increase the value of the bulletin, which in its nature is very complete.

SASKATCHEWAN

The Fourth Annual Report of the Bureau of Labour of the provincial Department of Agriculture, 1914, supplies much interesting information regarding harvest labour in Saskatchewan. It also contains a large amount of industrial statistics, showing values, progress of construction, rates of wages paid and so on.

The fifth annual report of the Director of Agricultural Extension, issued by the provincial Department of Agriculture, contains a complete review of the work of

the agricultural societies of Saskatchewan during 1914. A comparative table covering nine years shows that in that time the operations of the societies have developed to such an extent that while in 1906 only 34 exhibitions, 32 standing crop competitions and 20 seed fairs were held, last year there were 12 spring stallion shows, 49 ploughing matches, 100 exhibitions, 25 judging competitions, 25 standing crop competitions and 35 seed fairs. Complete details are given in the report of the proceedings at the agricultural societies' convention held at the University of Saskatchewan January 12 to 14, 1915, when 89 societies were represented. Results of agricultural competitions and lists of farmers' meetings and of Home Makers' Clubs are given.

BRITISH COLUMBIA

British Columbia Fruit is the title of a 78-page booklet issued by the British Columbia Fruit Growers' Association. The book is dedicated to the Patriotic Housewives of Western Canada and, pointing out the advantage of British Columbia fruit, offers a plea for the use of Western fruit, and 225 recipes for the use of same. Many illustrations add interest and information relative to the best varieties of apple, strawberry, raspberry, cherry, peach, plum, etc.

MISCELLANEOUS

Among the publications received recently by The Publications Branch are Special Leaflet No. 28, "Suggestions for the Cultivation of Catch Crops and Home Grown Feeding Stuffs" and Special Leaflet No. 29, "Flax Growing for Fibre", published by the Board of Agriculture and Fisheries, London, England.

Propagation of Upland Game-Birds. This is a seventy-page booklet, suitably illustrated, prepared by Herbert R. Job and published as Bulletin No. 2, by The National Association of Audubon Societies with headquarters at 1974 Broadway, New York. The publication deals in detail with the care and propagation of such birds as quails, pheasants, grouse, and wild turkeys, together with notes on the breeding of certain other species. Copies of the bulletin are available at twenty-five cents per copy.

Manual Training and Vocational Education; Chas. A. Bennett, Editor; Wm. T. Bawden, Managing Editor; published monthly, excepting July and August, by The Manual Arts Press, Peoria, Ill. There is a fund of helpful information in the June number of this excellently printed and engraved magazine. The first few pages are devoted to an article urging more attention to commercial matters in the public and high schools. Articles on the Philippine Public School display at the Panama Exposition and on Vocational Education in Brazil are followed by some practical papers on woodworking, architectural drafting, construction, etc., with descriptive illustrations.

A Handbook of Nebraska Grasses, with illustrated keys for their identification, published by the Agricultural Experiment Station of Nebraska, is a hundred and twenty page publication that is not without interest in Canada, seeing that some of the 352 varieties described are not only to be found in this country, but are natives. Exact details of every specie of grass are given with minute explanatory illustrations in classified order.

The day of scientific gardening and intensive growing, under glass and out-of-doors, is at hand in the province of Ontario. The art of packing and the science of selling are two branches of the business that must receive more attention in the future. We must grapple with these important questions very soon. The public are demanding neat packages in vegetables as in fruits. We must give the people what they want, or in other words, what they will pay for. I believe in advertising neat packages, and direct dealing with the consumer as much as possible. This is a field of endeavour that is wide open, and awaits the man with a vision of the future.—*President C. W. Baker at Ontario Vegetable Growers' Convention.*

BOOK REVIEWS

Correlated Courses in Woodwork and Mechanical Drawing, by Ira S. Griffith, A.B., third edition; 238 pages, with illustrations and diagrams; The Manual Arts Press, Peoria, Ill.; price \$1.50.

Beginning Woodwork at Home and in School, by Clinton Sheldon Van Duesen, M.E., illustrated by Edwin Victor Lawrence; fourth edition; 99 pages; The Manual Arts Press, Peoria, Ill.; price \$1.00.

Here are two most valuable books for manual training students and those men and women, boys and girls, interested in woodworking and mechanical drawing. Prepared for the schools and colleges of the United States the subject-matter knows no limitation of nationality, of kindred or race. Art and work and anything relating thereto are for all the world. The first-mentioned book is of course the more advanced and pretentious of the two. After the introduction, telling of the objects aimed at, a series of lessons are given for grades VII, VIII and IX of the public schools and for High School pupils, in a series of groups. Expenses involved and the equipment necessary are fully explained. No fewer than 103 pages in the third part of the book are devoted to well-defined plates of projects for beginning woodwork and mechanical drawing.

The second book, it is explained in a foreword by Professor Van Deusen, is intended as a definite statement of steps that may be followed by a beginner in learning the fundamental principles of woodworking. Instead of giving a general discussion of woodworking processes, the book describes and illustrates principles by means of specific examples. The instructions provided deal with such subjects as the equipment of the workshops, Laying Out and Sawing, Planing, Curved Sawing and Spokeshaving, Chiseling and Joining, Chiseling and Planing, and Furniture Making (Keyed Construction, Closed Mortise-and-Tenon Construction), all with explanations and side illustrations. An appendix gives lists of tools, materials and dimensions, detailed description of planes and directions for sharpening tools.

The General Education Board, 1902-1914; New York General Education Board, 1915; 254 pages.

This is a complete history of the twelve years the Board has been in existence, of its formation, and of the generosity of its chief benefactor, John D. Rockefeller, who has donated fifty-three million dollars to the uses of the Board. The book tells of the good work that is being done among all classes of the people, including negroes and indians. It is well illustrated and in its narration of an exhibition of sustained

and energetic patriotic and civic pride is worthy of wide-spread attention.

The Principles of Rural Credits, as applied in Europe and as suggested for America, by James B. Morman, with an introduction by John Lee Coulter, Ph.D.; Rural Science Series, L. H. Bailey, editor; 296 pages; 5¼ by 7½ inches; The Macmillan Co., New York.

It is not difficult to believe, as a note accompanying the book says, that the author, James B. Morman, is a practical farmer and a close student of agricultural problems. The work, which is dedicated to the farmers of the United States and Canada, abundantly proves that. The author aims to show how farmers may be successfully financed. He has divided his book into two parts, one telling of the methods adopted in European countries and the other explaining a constructive credit system that might prove advantageous to the farmers of this continent. Two chapters are devoted to "Canada's Progress in Co-operation and Rural Credits" and "Personal and Mortgage Credit for Farmers in Canada." In the first of these chapters a review is given of co-operative legislation and progress in rural credits in each of the provinces, and in the second a survey is taken of the establishment and operation of Alphonse Desjardins' Caisses Populaire, of the farm mortgage credit system in Saskatchewan, and of Hon. Arthur Meighen's Co-operative Credit Societies Bill, passed by the Dominion Parliament in 1914, concluding with a suggestion that the state loan system adopted by Australia and New Zealand might advantageously be taken up by this country. A brief exposition of the Torrens system lends additional interest to a valuable and instructive work.

Electricity for the Farm; light, heat and power by inexpensive methods from the water wheel or farm engine; by Frederick Irving Anderson, author of "The Farmer of To-morrow;" 265 pages; The Macmillan Co. of Canada, Limited; price \$1.25.

In the preface the object of this comprehensive and most instructive work is clearly laid down. It is designed primarily, so the author states, to give the farmer a practical working knowledge of electricity for use as light, heat and power on the farm. The electric generator, the dynamo, is explained in detail with outline illustrations. There are also chapters on electric transmission and house-wiring by which the farm mechanic is enabled to install his own plant without the aid and expense of an expert. There is water power running to waste on many farms that by following

the minute instructions given in this book could be turned to use. As the author further says, the tiny unconsidered brook that waters the farm pasture frequently possesses power enough to supply means, including light and heat, for doing much of the work of the farm and the home. For those not possessing water-power which can be devoted, there are chapters on the use of the farm gasoline engine and wind-mill, in connection with the modern storage battery, as sources of electric current. Several full page illustrations of methods, machinery and appliances, with lists of devices and tables of results, increase the value of the work, which could be read with interest, and probably with profit, by every progressive farmer.

Twentieth Century Impressions of Canada; its history, people, commerce, industries and resources; compiled by Henry J. Boam, F.R.G.S., and edited by Ashley G. Brown and Philip H. Morris; 952 pages; Sells Limited, Fleet St., London, Eng.

In a huge volume purporting practically to give a story of Canada as she is, it would be strange if considerable space was not devoted to agriculture. As it is with the pages limited to 50, or one nineteenth part of the work, it cannot be said that they are any too many. If, however, the publishers or editors, have not been too generous with the number of pages that deal with a subject with the importance of which no other branch of industry can compare, they have at least gone to some of the most knowledgeable exponents of agriculture in the country for contributions. Mr. T. K. Doherty, LL.B., Commissioner of the International Agricultural Institute, for instance, in writing on "Agricultural Organization," reviews the state of agriculture in a governing sense to completion. He explains the different divisions and branches, and briefly sketches the history of the acknowledged associations connected with grain growing, live stock breeding, dairying development, horticulture, entomology, farmers and women's institutes and agricultural co-operation. Professor S. B. McCready, Director of Elementary Agricultural Education for Ontario, outlines the Agricultural Instruction Act and refers to the chief educational institutions devoted to agriculture and to the inside and outside, otherwise extension, work that is being done. Mr. O. C. White, Assistant Dominion Field Husbandman, sets forth the advantages of Mixed Farming as compared to the exclusive growing of grain. Mr. W. T. Macoun, Dominion Horticulturist, deals with the status of "The Fruit Industry," stating what is being done in the country as a whole and in the different provinces for its development. Mr. H. S. Arkell, Assistant Live Stock Commissioner, supplies valuable information on The Cattle Industry, statistical and otherwise,

especially with reference to exports and imports and breeding. The Dairy and Cold Storage Commissioner, Mr. J. A. Ruddick, concisely outlines the progress that is being made in dairying, treating particularly of the volume of trade that has been created and its direction. Mr. W. Fawcett Moore devotes a short article on The Poultry Industry mainly to the necessity of judicious breeding. Mr. J. B. Spencer, Editor and Chief of the Publications Branch of the Department of Agriculture, in two pages depicts the importance of The Swine Industry and furnishes statistics showing the variations of the export trade from Canada, the swine slaughtered at inspected establishments since the system of government inspection was inaugurated in 1907, and the number of pedigree registrations made with the National Live Stock Records Board. Other articles are on Grain Growing in a general sense and briefly sketching the work at the Experimental Farms. The big volume is profusely and handsomely illustrated with many full-page combination and other engravings, including portraits of the premiers and lieutenant-governors of the provinces as well as of H.R.H. Prince Arthur of Teck and the Right Hon. Sir Robert Borden, G.C.M.G., P.C., LL.D., K.C., Prime Minister of the Dominion.

Poultry Diseases, by E. J. Wortley, Orange Judd Company, New York City, 5 x 7 1/2 inches, 123 pages, illustrated.

The aim of the author was to put a concise handbook into the hands of poultry raisers who should thus be assisted in determining the various diseases, and in taking the precautionary steps important in preventing the introduction and spread of contagious diseases. No attempt was made to deal exhaustively with the scientific side of the subject. The treatise, while not sufficiently complete for the scientific worker, is particularly well adapted for the use of the ordinary keeper of fowls, in fact it might well have a place in every farmer's library. It points out the importance of the selection of healthy stock, intelligent feeding and proper housing. The work embraces five chapters bearing the following heads:—General Methods of Controlling Disease, Summary of External Symptoms and Treatment, Diseases of Poultry other than Fowls, Diseases and Pests of Fowls and Post Mortem Examinations. The diseases and pests of fowls occupy the greater part of the book. One hundred and seventeen in number they cover practically all the ailments likely to give trouble in the poultry yard. They are treated in alphabetical order and very much to the point, showing in many cases views of characteristic symptoms and other features.

NOTES

Strawberries on the Pacific Coast this year have only been about 60 per cent of a crop.

Registration of 638 males and 1,599 females is reported in Volume IV of the British Holstein-Friesian Cattle Society.

The Department of Agriculture of Prince Edward Island is making arrangements for demonstrations in the marketing and grading of wool.

Mr. J. B. C. Trudel, Provincial Superintendent of cow testing in Quebec, reports that there are now over 600 farms in the province keeping records of production and cost of feed for from 5,000 to 6,000 cows.

In the month of April, according to the report of Mr. E. A. Ray, Trade Commissioner at Birmingham, the export of wheat from Canada to Great Britain, although decreased in quantity, increased in value by £263,335, the export of wheat-meal and flour by £17,974, oats by £18,762, maize by £22,465, bacon by £247,520, hams by £13,689, butter by £7,686, and cheese by £8,814. Barley decreased by £19,666.

A report issued in London on the Irish Pig Breeding Industry shows that the gross annual value of the industry is £8,000,000. There was a decrease in 1914 compared with 1913. Fifty firms employing 3,000 hands are engaged in bacon-curing. Although, Ireland is a pork-raising and bacon exporting country, a considerable amount of American and Danish bacon finds its way there. The labouring classes are said not to be raisers of pigs, as they used to be, but to have taken to rearing poultry.

There are over one thousand flocks of sheep in Manitoba, states Live Stock Association Secretary, George G. Greig, in issuing a circular to all the farmers of the province regarding the grading and marketing of wool, that the Department of Agriculture has undertaken with his supervision. The Department will advance two-thirds of the market value on shipments and pay the balance on sale, retaining one cent a pound to provide for contingencies.

One and a half tons of seed grain have been distributed to farmers in the province of British Columbia by the Department of Agriculture. This quantity was sent out in five-pound lots, which were disposed of at a very low price, with the understanding that each farmer report to the Department at the end of the season. In addition, five hundred samples of three varieties of corn and one and one-quarter tons of mangel seed were distributed by the Farmers' Institutes.

The Manitoba Department of Agriculture has announced that automobiles will tour the province this year in the interests of better farming in the place of the trains operated in past years. Route No. 1 has been scheduled and the full itinerary of this route called for two meetings per day from June 8 to July 1, stops being made, and meetings held, at thirty-nine places. The speakers and subjects were announced to be: Prof. L. J. Smith, silos and farm engineering; lecturer, J. E. Bergey, profitable poultry husbandry; Prof. E. Ward Jones, animal husbandry; Miss Begby, home nursing, and Miss Green, dress-making. The route taken was largely in the district covered by Nelson Smith, District Representative, who accompanied the party and took part in the work.

On July the 7th, 8th and 9th, in Calgary, there was held a conference between the British Columbia fruit growers, fruit growers' associations, shippers and shipping organizations, fruit jobbers and wholesalers, railroad officials and retailers.

The purpose of this convention was to investigate the many unsatisfactory phases of the fruit situation as affecting the various interests, from the grower to the consumer, and to endeavour to correct and adjust conditions as far as possible. The Calgary Board of Trade, as a disinterested body, acted as a medium between all the various interests, from the grower to the ultimate consumer, and is quite confident that satisfactory results will be obtained.

The secretary, Mr. Thomas P. Sutton, extended an invitation to individual fruit growers and farmers, fruit growers' associations, packers and packing organizations, fruit jobbers and wholesalers and their associations, boards of trade, transportation and cartage officials, retailers and consumers and league officials, to attend this convention and be fully prepared to submit arguments and data concerning their own interests.

The Department of Agriculture of Saskatchewan has recently issued for posting on boards at different points notices regarding Care of Young Stock, Winter Rye and Agricultural Society Work as well as a bulletin giving the prices of live stock and wool on May 31 at Winnipeg, Calgary, Toronto, St. Paul and Chicago.

This year before the opening of the Maple season the Pure Maple Sugar and Syrup Co-operative Agricultural Association of Quebec entered into an agreement with The Co-operative Cheesemakers' Association, whereby the latter handled the output of the members of the former association. Mr. Auguste Trudel, the manager of the Cheesemakers' Association, is authority for the following statement of business transacted in maple products:

Maple syrup sold, 4,000 gallons.

Prices: No. 1, \$1.15; No. 2, \$1.05; No. 3, \$1.00.

Maple sugar sold, 13,000 lb.

Prices: No. 1, 10½ cents; No. 2, 10 cents.

Mr. R. Schuyler, District Representative of the Ontario Department of Agriculture for Brant County, in a letter to THE AGRICULTURAL GAZETTE, states that the American Tent Caterpillar is very plentiful throughout the county this year, nearly all of the unsprayed trees having one or more nests in them.

Mr. Schuyler prepared an article on the Tent Caterpillar and published it in the local papers, with the result that many inquiries were received at his office re the pest. Letters were also written to the papers advising farmers to be on the lookout for the Army-worm, of which there was a serious outbreak in the county in 1914.

The product of the thirteen Saskatchewan creameries operated by the government during the winter season of 1914-15 aggregated 255,805 pounds, as against 234,858 pounds during the previous winter, an increase of 20,947 pounds or 9 per cent increase. The extreme shortage and high prices asked for practically all kinds of feed induced many farmers to sell their stock, so that the increase of 21,000 pounds of butter under such conditions, which were by no means confined to any one section of the country, is well worthy of commendation, and indicates clearly that there is no discouragement amongst the dairy farmers of the province, whose prospects are on all sides regarded as satisfactory in every way.

Co-operation in insurance has been tried in England and proved successful. Founded in 1909 the Agricultural and General Co-operative Insurance Society has declared a bonus each year of from 15 to 35 per cent except in 1913, when the losses were exceptionally heavy, but even then all liabilities were met by receipts and a balance carried forward.

Prices of all kinds of meat-stuffs in Scotland had increased in May from 30 to 50 per cent, compared with the quotations that ruled in the same month last year. Because of the high prices and the impossibility of getting supplies from wholesale dealers, between two and three hundred of the smaller butchers in Glasgow are reported to have closed their doors.

The Board of Trade and Fisheries of Great Britain recently issued circulars calling upon farmers not to dispose of their breeding stock, especially of cows and sows, and to increase the acreage as far as possible to be cut for hay. Landowners and farmers were also urged to offer their crops of hay to the military authorities in the first instance.

The Department of Education of Prince Edward Island recognizes that it is never too early to begin. On the front page of a "pen-work" or scribbling book issued under its auspices, is presented a picture of McRae's cow, Milkmaid VII, that in one year gave 16,696 pounds of milk that made 850 pounds of butter. Over the cow which is termed "A valuable Islander," appears the words "Stick to the Farm" and, beneath it, in similarly large letters, "Keep good cows and they'll keep you."

The contents of the Bulletin of Foreign Agricultural Intelligence, for the month of April, 1915, issued from the office of the Canadian Commissioner of the International Institute of Agriculture, cover agricultural matters in many parts of the world. Irrigation in Italy, Forage Crops for Semi-Arid Regions, Variation in the Apple, Scrapie in Sheep, Mixtures for the Destruction of Weeds, Making Baby Beef, Useful Hints about Milking, Common Birds useful to the Farmer, Agricultural Co-operation in South Australia and in the United States and Agricultural Credit in Italy, are among the subjects dealt with. The usual valuable statistics regarding the world's supply of wheat are given.

Co-operative Agricultural credit is making headway in the Punjab, India. The province has a population of twenty million. Village banks were started in 1905-6 by 23 societies with 1,203 members and a working capital of 2,840 pounds. In 1913-14 the societies numbered 3,333 and the members 160,892, while the working capital was 1,228,660 pounds. The interest on deposits is 6 per cent and on loans 12½ per cent. The latter appears high, but, prior to the establishment of these banks, money for agricultural purposes was unprocurable below 18, 24 or even 36 per cent.

Referring to the decline of the meat supply in Great Britain *The Scottish Farmer* says that, however the figures may be manipulated, the broad fact has to be faced that, war or no war, the meat supply of the world is short, and while the war lasts it will be shorter. "Large quantities of frozen boneless meat," the paper adds, "used to come to Glasgow for the manufacture of sausages. During last year none came, and in its place a big trade was done in ancient emaciated cows from the Emerald Isle Many of these cows were twenty years old Another feature of the trade during last winter was the large number of pregnant cows slaughtered."

Wm. J. Bonavia, Secretary, Department of Agriculture in British Columbia, has recently sent to the secretaries of Farmers' Institutes a copy of the Noxious Weeds' Act, 1915, which has been revised at the recent session of the Provincial Legislature, together with a circular letter pointing out the following chief alterations:

1. Destruction of weeds to be within seven days of date of notice.
2. Where noxious weeds are found growing on non-resident lands, that is, lands that are unoccupied and owned by non-resident owners, the Inspector may proceed to destroy such weeds without notice, the expenses incurred being assessed as taxes.
3. A detailed statement as to expenses incurred in cutting weeds, verified by statutory declaration, and forwarded to the Hon. Minister of Finance and Agriculture, the local Government Agent, or Municipal Clerk, after being duly audited, shall be evidence that the sums have been duly expended and are assessable as taxed.
4. The penalties for non-compliance with notice to cut weeds have been materially increased, the minimum fine being not less than \$25.00, to be recovered with costs under the "Summary Convictions Act."

Sales held at Calgary and Lacombe recently under the auspices of the Alberta Cattle Breeders' Association show considerable variation in prices compared with those held last year. At Calgary the average brought by 336 animals (213 Shorthorns, 86 Herefords, 30 Angus, 1 Ayrshire and 6 Holsteins) was \$159.53 this year against \$186.65 for 203 animals last year. At Lacombe, where heavy and continuous rain made the conditions unfavourable, the average for 73 animals this year was \$152.53 against \$157.47 for 51 animals last year. Shorthorns showed a decline in price at Calgary from \$168.70 to \$146.38, but at Lacombe they showed an increase from \$158.71 to \$172.60. Herefords declined in value at both centres, but Angus were steady at Calgary and at Lacombe 14 sold for \$122.14 against 5 for \$75 per head in 1914.

Efforts are being made by the provincial department of agriculture of Nova Scotia to organize the out-lying settlements. Where sufficient capital is not forthcoming to erect a creamery a demonstration creamery is being established with the understanding that when it is made financially successful, it will be taken off the hands of the Department. To a limited extent the same idea is being carried out as regards small wheat and feed mills. Principal Cumming, Secretary of Agriculture, Dairy Superintendent W. A. MacKay and H. S. Cunningham, Cape Breton County Agricultural Representative, have the matter in hand and at Baddeck, C.B., and Scotsburn, Loch Katrine, Yarmouth and elsewhere report gratifying success. Their latest attention has been directed to the Margaree country, where six meetings have recently been held with an average attendance of 75.

Under what is known in Great Britain as the Development Fund, "Advisory Officers" are being appointed whose duty it will be to supply information and advice on the principles and practice of subjects that require special study, to investigate, or to arrange for the investigation of those subjects, keep in touch with the progress of agricultural research and to endeavour to ensure that new scientific discoveries do actually benefit the farmers of the district. These are in addition to the "County Organizers", who advise on the general principles of agriculture, arrange for investigation of local problems, and aid in scientific research on agriculture and on diseases of plants and animals, with the object of improving the quality of the information available for agriculturists in their particular districts.

The Magazine Guardian of Charlotte-town has recently opened a Women's Institute section, the matter for which will be furnished by Mrs. A. E. Dunbrack, Supervisor of Women's Institutes in the province. The institutes in Prince Edward Island now number 32 and to the members of these and all women interested in the movement, this new section should prove of exceptional value.

Professor S. B. McCready, B.A., has resigned his position as director of elementary agricultural instruction in the Department of Education of Ontario. Mr. McCready's resignation took effect on July 1st. Mr. McCready was appointed professor of botany and entomology at the Ontario Agricultural College in 1907 to succeed Professor W. Lochhead, the latter joining the staff of Macdonald College. Later, Professor McCready became professor of nature study and had charge of the class of teachers in training. This latter work grew in extent and value to such a degree that the provincial Department of Education appointed him director of elementary agricultural instruction. Because of his fitness for this work and his enthusiasm in it Professor McCready's retirement will be keenly regretted by hundreds of teachers throughout the province. He proposes to take a well-earned rest before deciding on his future line of work.

"I am confident that the time is not far distant when the annual fair will represent something better than a mere exhibition of live stock and agricultural and domestic products. The annual exhibition should be an institution that represents something of the highest type of rural civi-wn of the community. is found in the representative u community should be enlisted pastor of the church should be to make an exhibit of what he th his best equipment of methods community uplift. The school teacher ould be encouraged to make her exhibit the embodiment of practice which makes for educated minds, disciplined and orderly. So with the banker, the blacksmith, the tailor, the hotelkeeper, and the homemaker, as well as the tiller of the soil and the stockman. Monetary rewards might be abolished and merit recognized by diplomas. The community spirit should be fostered, and the idea inculcated that all personal effort is essentially for the community whether it be conceived in selfishness or pure altruism."

—S. E. Greenway, *Director Agricultural Extension for Saskatchewan.*

Mr. F. S. Grisdale, B.S.A., has been appointed principal of the School of Agriculture at Vermilion, Alberta, succeeding Mr. E. A. Howes who has been appointed Dean of the Faculty of Agriculture in the University of Alberta. Mr. Grisdale, who is brother of the director of experimental farms, is a graduate of Macdonald College. After graduating he was for one year assistant to the superintendent of the experimental station at Lethbridge. During that time he had charge of some special cultural investigation work at each of the prairie experimental farms and stations. He then spent a year on the staff of the "Nor-West Farmer," where he gave special attention to livestock matters. For the past two years he has occupied the position of agriculturist at the school of agriculture and demonstration farm at Olds, Alberta, where he has done considerable teaching.

In a well-studied-out article in "Canadian Farm" on "A Sane View of Public School Agriculture," J. McCaig, of the Department of Education, Edmonton, points out the necessity for thoroughness in teaching, and then suggests that the following are a few things that should be kept in mind:—

1. Being an applied science, it is dynamic in aspect, and is, for this reason, an attractive subject for elementary schools.
2. It is of little use unless given laboratory treatment in field, garden, and school-room.
3. There is no difficulty in making it so. No purchased equipment is necessary, and the materials are right at hand.
4. All people are finally and ultimately rurally-minded, whether they live in the city or the country.
5. The essential things about soils and plants can be taught as well in the city as in the country.
6. Educational changes are put into form not by laymen, but by trained leaders and thinkers, who have a large educational setting into which to fit subjects and harmonize them.
7. Teachers require greater help in subjects like agriculture than they do in such subjects as grammar and arithmetic, which are ingrained in their experience.
8. Agriculture should be a compulsory subject in the high school for those who are going to train for teachers.
9. It is the subject above all on the public school course that gives vitality and interest to study by its connection with real concerns.

The Manitoba Department of Agriculture has announced its full schedule of Boys' and Girls' club fairs. The fairs, fifty in all, will be held from September 21st to October 9th, and in these over 5,500 boys and girls will participate. From six to twenty-five schools will take part in a single fair.

Karakul Sheep. "Sheep farming in New Brunswick promises to rival fox farming in Prince Edward Island," writes S. J. Shanklin, R. R. 1., St. John county, N.B., in the Census and Statistics Monthly for May. "Companies are being formed and a start made in producing Persian lamb fur. A company has been formed in St. Martin's, St. John county; they are raising foxes, raccoons and sheep. They imported one Karakul ewe and Karakul ram; the lamb now a few weeks old they value at \$2,000. The lambs from the Karakul ram and pure bred Lincoln and Cotswold ewes (all the lambs shining black) they value at some \$200 each. The ewes were purchased in Ontario last fall. The lambs, some forty in number, at present are being kept for breeding purposes. I think this industry promises good returns. The lambs will not be killed for the fur for some time, or until the supply for breeding purposes is filled up."

Wisconsin is giving attention to the question of farm credit. A bulletin recently issued, by the Agricultural Experiment Station, describes "The Ashland Dairy Plan." In the spring of 1913 the Wisconsin State Bank of Ashland purchased some high-class dairy cows, which they sold to farmers with the understanding that they were to be paid for by one half the amount received each month for the product of the cow, interest at 6 per cent being charged. All a farmer has to do is to sign an application to the bank. A committee of business men become responsible for the loan. Two trustees representing the bank pass on the application and, with the assistance of an agricultural college official, purchase the cows. Another system is carried out at Superior by what is known as the Rotary Club, which, through three trustees, becomes responsible to the bank, buys and sells the cows and accepts payment at the rate of \$3 per month each cow, including interest at the rate of 7 per cent per annum, 6 per cent of which goes to the bank and 1 per cent to the club to meet expenses. An additional charge of \$2 per head per annum is made for insurance. One of the virtues of both systems is that the farmer is protected from making a poor bargain.

A Press Letter of the University of Arizona College of Agriculture, publishes the rules governing the Arizona Pig Club for 1915. These rules state that the contestants shall be over ten years of age and under nineteen; each member must secure a pig six to eight weeks old at beginning of contest, feed and care for it throughout a continuous period until it is eight months old; pig entered must be accurately described as to breed, colour, age, weight, markings, etc.; records must be kept in such a shape that a report can be rendered at any time. In addition, each member shall agree to make a special study of the feeding and care of pigs, with special attention to the literature distributed from the Arizona College of Agriculture and the United States Department of Agriculture. Prizes shall be awarded on the following basis: Rate of gain per day; cost of grain; care of pigs; score record of pigs; and story of production and records. Encouragement is given to the contestants through the fact that they shall compete for national, state, county and local prizes.

The Department of Agriculture of the province of Alberta is, this year, operating a "Better Farming" train. The train will consist of twelve cars. Two of these will carry livestock consisting of draft horses, beef cattle, dual purpose and dairy cattle. Two others will contain models of buildings for the housing of cattle, horses, sheep and swine. Dairy and poultry interests will occupy one car, the exhibit consisting of farm dairy machinery and equipment, butter samples, poultry buildings and fittings; poultry brooders, incubators, etc. A car will display the work of the agricultural school, and contain mounted specimens of agricultural products. Other will be fitted up for demonstrations, one will be used for lecture purposes, while grains and weeds will occupy one car. Speakers, including Hon. Duncan Marshall, Minister of Agriculture; H. A. Craig, Minister of Agriculture; E. A. H. Dean of the Faculty of Agriculture, and many others from the department and the college of agriculture, will accompany the train, and the subjects dealt with will include judging, breeding, feeding and managing live stock; veterinary care of livestock; the preparation and marketing of wool, marketing of butter, eggs and poultry, and game conservation. For the women, lectures will be given in cooking; sewing, home nursing and sanitation. The Dominion Government and the railway companies are co-operating with the Provincial Department and the itinerary, lasting about six weeks, will extend from the southern boundary of the province to the Peace River crossing.

Through the co-operation of the Saskatchewan Department of Agriculture and the Canadian Credit Men's Trust Association, a movement has been arranged whereby boys in Saskatchewan, 14 years of age or over residing on farms within municipalities employing agricultural secretaries, may come to a camp at the larger exhibitions of the province and there be given competitions. At these camps a certain programme of competitions in stock judging, grain judging, and plant identification will be conducted, ten boys from each municipality being taken as a team. Demonstrations by capable men will precede each competition. The team making the highest total scores in five competitions will receive a shield. This year, it is expected that over 500 boys will be camped at the provincial fair in Regina.

In a letter to THE AGRICULTURAL GAZETTE President W. J. Black of the Manitoba Agricultural College writes as follows with reference to the milking regulations of that institution:—

"Not having any prescribed set of rules for milkers, it has been our custom hitherto for one of the instructors in animal husbandry to personally instruct the dairy herdsman in the most approved methods of milking and handling of milk, and by frequent visitations during milking time to see that the work is carried out quite in accordance with such instructions.

"The method of procedure is, briefly, as follows:—

The cows are well groomed once each day.

All fodder is fed after milking, hence avoiding excess of dust in the atmosphere at this time.

The udders and flanks of all cows are wiped with a damp cloth previous to milking.

Milkers must milk with dry hands and wash same after each milking.

The small-top milk pail is in use.

All milk is sieved through two thicknesses of cheese cloth and is immediately cooled by placing the cans in running cold water.

Perfect cleanliness is observed in the dairy and stable at all times.

The atmosphere of the stable is kept pure by good ventilation and frequent spraying of the gutters and passages with a disinfectant.

All milk pails and other dairy utensils are thoroughly washed and sterilized.

The mixed milk is ever pure as to flavour, and this we directly attribute to the methods employed."

PRESERVE OUR FLOCKS AND HERDS!

MAINTAIN OUR MEAT SUPPLY!

Under the above headings the British Board of Agriculture and Fisheries has issued the following advice to the farmers of the United Kingdom:—

Do not send breeding and immature stock to the butcher simply because prices are attractive now.

Do not market half-finished animals; it is wasteful of the country's resources and is against your own interest.

Do not kill calves; rear them; it is well worth it.

Do not reduce your stock; when you cannot buy stores, buy calves.

Maintain your flocks and breed your sows; it will pay you to do so.

LOOK TO THE FUTURE!

There has recently been issued the Report of the Educational Commission of the State of Vermont. This commission's recommendations respecting vocational education are summarized as follows:—

1. The instruction in the public schools to be of that character to educate the youth towards the occupations of the communities in which they live.
2. The establishment in the junior high schools of semi-vocational courses offering opportunities for instruction in commercial subjects, domestic science, manual training, and agriculture, appropriate to the needs and environment of the particular school.
3. The establishment in the senior high schools of high grade courses in agriculture, together with courses in manual training, commercial subjects and domestic science.
4. The strengthening of the equipment and teaching staff of the State Agricultural School and the increase of its appropriations and the development therein of courses in manual training, incident to agricultural training, and in some measure fitting for the pursuit of the manual trades as vocations.
5. State appropriations to the State Agricultural College for the purpose of: (a) Training teachers in agriculture for the high schools; (b) Co-operating with the federal extension work in agriculture.

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR · J B. SPENCER, B.S.A.

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THE PROBLEM IN BUTTER-MAKING

BY J. A. RUDDICK, DAIRY AND COLD STORAGE COMMISSIONER

THE improvement in the quality of Canadian butter in recent years has resulted in a great increase in home consumption and consequent enlargement of the market. Every effort which has been made through the different agencies, both federal and provincial, to raise the standard of quality has been well worth while and the results are a standing encouragement to further effort with the same object in view.

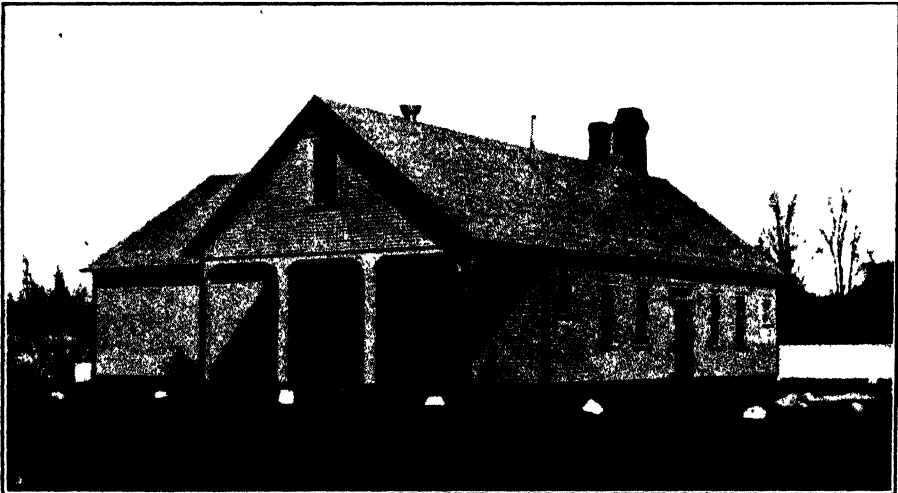
In those sections of the country where the cream gathering system is in vogue, no single measure for the improvement of the quality of the butter is of greater importance, or is likely to be more successful, than that of cream grading. The results already attained in Alberta, Saskatchewan and Manitoba, especially in Alberta, are abundant proof of the practicability and efficiency of the methods which have been adopted in these provinces for the grading of the cream as supplied to the creameries. If cream grading can be supplemented by a workable system of butter grading, which will ensure a fair discrimination in price according to grade, the stimulus thus given to everything which makes for better quality will be very great.

The value of the grading of the cream or butter lies in the fact that it leads to payment on a quality basis. It is the lack of this discrimination in the butter trade generally, especially in relation to the primary sale by the manufacturer, which stands as the greatest barrier to progress that the industry has to face. All arguments or representations looking towards improvement lose their effect when it can be asserted in reply that the butter of inferior quality can be sold at the same price as other butter produced under very much better conditions.

We are not concerned for the moment with the reasons why the merchants are impelled to do business in this way, we merely want to point out a few facts as briefly as possible. This tendency to strike an average value neither encourages the progressive butter maker who turns out a superior article, nor punishes the indifferent or careless maker whose product is of inferior quality. Neither the creamery owner nor the patrons of the creamery can be expected to take much interest in the matter of quality when they see butter of widely different quality being sold for practically the same price.

If there were the same discrimination in value in the purchase of butter from the manufacturer as there is in the retail trade the patrons of many creameries would soon awaken to the fact that they were receiving a very much smaller return for their milk or cream than the patrons of other creameries where the business is conducted on better lines. How to secure full value and a reasonable discrimination in price is one of the greatest problems before the dairymen of this country. It is the problem of problems. If it were solved most of the other problems would solve themselves. There is no question before the dairymen of Canada to-day which deserves more careful study and attention.

NOTE:—In Part II of this issue officials of the Provincial Departments of Agriculture relate what their respective branches are doing to improve the quality of creamery butter.
—EDITOR.



A MODEL CREAMERY

The creamery represented in the above illustration has been operated by the Dairy and Cold Storage Branch, at Brome, Quebec, to demonstrate the advantages of certain improvements in creamery buildings; to determine the value of new apparatus and machinery, and new methods and practices in the manufacture of butter; to encourage the production of winter milk, and to demonstrate proper business methods in the management of creameries. This creamery, erected in 1912, was recently destroyed by fire.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF FIELD HUSBANDRY

CROP ROTATION AT OTTAWA

BY W. L. GRAHAM, B.S.A., ASSISTANT TO DOMINION FIELD HUSBANDMAN

ON the Central Experimental Farm there are at present 13 different rotations being tested. The object in view is to obtain definite results as to the merits of these rotations managed under a system of cultural methods varied to comply with different conditions. Moreover, these results should serve the farmer as a basis or general guide in the management of farm crops.

By rotation is meant the following of one crop with another in a regular repeated succession. It means further a sequence of crops which insures supplies of plant food in the soil of such a character as to stimulate high yields of each particular crop. In arranging a rotation, therefore, it is necessary to have some knowledge of the food requirements of different crops and to know something of the value of residues from the different crops included. From experiments conducted for a period of years it is evident that good rotations include:—(1) roots or corn; (2) cereals; (3) meadow or pasture crops. Various combinations of these three classes are possible, but a rotation there must be in order that

the farmer may economically render his farm more productive.

The first experience here with rotations was with one of five years' duration which showed such remarkable results that in 1904 it was decided to inaugurate a series of rotations. These included rotations considered suitable for the average live stock farm, and two four-year rotations of shallow ploughing and subsoiling versus deep ploughing in preparation for hoed crops. In addition to the foregoing it was found possible to introduce in 1909 three rotations having for object the obtaining of some information as to the value of commercial fertilizers in regular farm rotation. In 1912 still another rotation was added to this series in which no fertilizer of any kind was used. Hence in 1911 are to be found the average results of 8 years of experiments with regular rotations. The year 1914 terminated an 11 years' test of shallow ploughing and subsoiling versus deep ploughing and 6 years' results from the test with fertilizers. A fairly full account of these results and an outline of the rotations will appear in the annual report.

THE DIVISION OF ANIMAL HUSBANDRY

MILKING MACHINES

BY E. S. ARCHIBALD, B.S.A., DOMINION ANIMAL HUSBANDMAN

AS reported previously, the experimental work with milking machines started in the fall of 1912, the first year's work dealing largely with a comparison of the Sharples milking machine with good hand milking. All experimental work with milking machines was of necessity discontinued on October 11, 1913, due to the loss of the buildings by fire. The new building being completed, the Sharples and several other makes of milking machines were installed, and an experiment was started on November 1, 1914.

A summary is here given of the year's work with the Sharples mechanical milker as compared with the previous year and the consequent year on hand milking under somewhat similar conditions. The table on following page gives the year's lactation periods of twenty cows during 1911 on hand milking, 1912 and the first part of 1913 with the milking machine, and the latter part of 1913 and 1914 to November 1 on hand milking.

DEDUCTIONS FROM FIRST EXPERIMENT

It will be noticed that the total milk flow per cow per day in 1912 is greater than in 1911, this being due probably more to the fact that the lactation periods were shorter and the cows were one year older than to the influence of the milking machine. However, the year 1913 showed a marked increase over the year 1912. The average of the years 1911 and 1913 compared with 1912 shows that the cows have not very materially decreased in their milk flow owing to the influence of the Sharples milking machine. The very marked increase in parts of the

lactation period for 1914, included in this table, is due largely to the fact that fewer cows are included, and, even more important, that the lactation periods are not completed, consequently the average per cow per day is higher than it would be after all the cows have completed their full milking periods. Although nothing definite can be drawn from the table, yet we feel safe in saying that in so far as these and other figures for cows not included in this table go, the milking machine has not shown a very marked decrease in the milk produced by this herd.

The quantity of strippings produced after the milking machine was quite variable, in the case of some cows the strippings after each milking amounting to from $\frac{1}{2}$ to $1\frac{1}{2}$ pound. These, however, were the exceptions, and the average strippings taken from the cow after the machine ranged from $\frac{1}{8}$ to 1 pound per cow per milking.

The commercial difficulties with this machine encountered are as follows:—

1. Cows inclined to be nervous sometimes kick off the teat cups. These cups not being suspended in any way immediately fall to the floor and suck in bedding, dust, or any other filth, much to the detriment of the quality of the milk. Although such accidents are more or less rare, still it must be remembered that one accident of this kind per milking will largely deteriorate the quality of the milk for that milking if the milk is poured with the clean, pure milk from the other cows, and if the machine is again used on another cow without being thoroughly washed and sterilized.

2. A little trouble was met with in the pulsators occasionally sticking,

SUMMARY FOR SHARPLES MILKING MACHINE EXPERIMENT

Breed	1911, Hand Milking				1912, Machine Milking				1913, Hand Milking				1914, Jan. 1 to Nov. 1, Hand Milking					
	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day	Age at Start	Days Milking	Milk Produced	Average Milk per Day		
Marjorie 4th.	3	298	Lb. 6,480	21.7	4	242	Lb. 5,657	23.4	7	327	Lb. 9,493	29.0	8	175	Lb. 7,610	43.4		
Flavia 2nd.	5	267	9,364	35.1	6	332	10,319	31.0	7	237	4,746	20.0	8	175	7,610	43.4		
Jessie D.	5	273	5,905	21.6	6	287	5,415	18.8	7	237	4,746	20.0	8	175	7,610	43.4		
Ottawa Kate.	4	281	5,644	20.0	5	367	10,451	28.4	6	395	12,262	31.0	7	183	8,192	44.7		
Denty 4th.	4	244	7,839	32.2	5	269	8,699	32.3	6	341	7,280	21.4	7	175	6,323	36.1		
Marjorie 2nd	4	312	7,617	24.4	6	244	5,547	22.7	5	269	6,258	23.3	6	186	7,068	38.0		
Flavia 3rd.	5	307	6,776	22.1	4	223	7,223	22.4	5	269	6,258	23.3	6	186	7,068	38.0		
Marjorie 6th	3	384	7,203	18.7	3	318	5,334	16.8	4	368	9,216	25.0	5	212	5,474	25.7		
Ottawa Kate 2nd	2	371	6,623	17.9	3	299	5,056	16.9	4	368	9,216	25.0	5	212	5,474	25.7		
Maggie Pulchrae	2	419	6,552	15.6	3	308	7,258	23.5	4	285	6,929	24.3	5	352	9,024	25.6		
Denty 3rd	6	335	7,635	22.8	7	288	5,448	18.9	8	408	9,757	23.9	9	182	5,262	28.9		
La Belle	4	336	6,815	20.2	7	315	5,754	18.3	8	304	4,767	15.6	9	406	9,671	23.8		
Fortune 4th	6	286	7,452	26.1	5	289	5,834	20.1	6	413	9,722	23.5	7	123	4,690	38.6		
Aromaz	4	305	6,769	22.2	5	306	6,614	21.6	6	403	7,925	19.6	7	165	5,943	36.0		
Inoquette 3rd.	3	261	4,803	18.4	4	396	7,810	19.7	5	381	6,830	17.9	6	123	4,690	38.6		
Fortune Cadette.	2	292	4,950	16.9	3	319	5,797	18.2	4	335	6,002	17.8	5	340	7,386	21.5		
Archer's Pearl	2	297	4,148	14.0	3	615	8,120	13.2	4	340	7,236	21.2	5	349	8,484	24.2		
Ottawa Deanie.	2	335	4,780	14.2	3	359	5,083	14.4	4	350	8,415	24.0	9	271	6,384	23.5		
Ottawa Itchen	6	280	7,029	25.1	7	296	4,269	14.4	8	350	8,415	24.0	9	271	6,384	23.5		
Itchen's Favour.	2	546	8,370	13.5	3	363	6,389	17.6	8	350	8,415	24.0	9	271	6,384	23.5		
Totals.	20 head	6,429	132,764	...	20 head	6,385	132,087	...	15 head	5,156	116,838	...	13 head	3,119	91,461	...		
Averages.		321	4	6,638	20	318	4	6,604	20	343	7	7,786	22	239	9	7,035	429	3

N.B.—(1) Sharples Machine started July, 1912; (2) the year denotes the time when the cows freshened; (3) in 1912 year, many of the above mentioned cows were milked a month or two by hand; (4) in 1913 year, many of the above mentioned cows were milked two or three months by the machine.

becoming slow. The careful supervision of the herdsman was required to keep these pulsators thoroughly cleaned and oiled in order that the pulsation might be normal and uniform.

3. Absolute gentleness in the introduction of the machine to the cows is necessary in order not to antagonize any animals permanently against the machine.

4. The absolute cleansing of the machine was necessary in order to keep down the bacterial count. This point will be dealt with in the succeeding paragraph.

Undoubtedly it has been proven in this year's test that the successes or failures which may be met with depend very largely on the man who is operating the machine. Carelessness in adjusting the machine to the cow, lack of intelligence in operating each machine to suit the individual needs of each cow, or any similar lack of care, will undoubtedly cause a loss from that cow upon introducing the milking machine.

PURITY OF THE MILK

During the first six months of this test it was found that the milk produced by the Sharples milking machine contained on an average three to ten times as many bacteria as that of scrupulously careful hand milking, the counts ranging from 5,000 to 70,000 bacteria per c.c., as all precautions were being taken to produce the equivalent of "certified milk." During the three succeeding months of the test, by the aid of improved methods of washing, sterilizing, and manipulating the machine, together with the beneficial influence of the cold winter weather, far better results were obtained from the milking machine as to purity, although even here the hand-produced milk contained as a rule less than one-third the total bacteria. As the warmer weather of the summer of 1913 advanced, the milking machine again

showed much greater difficulty in producing pure milk than by good careful hand milking. All samples of these tests were taken from the cans immediately after the straining of the milk. In all cases it was found that when the rubber tubing was new and perfectly smooth, the machine-produced milk ranged very well with hand-produced milk; but as soon as the surface of the rubber showed any wear, the bacterial count immediately rose from three to ten times the former count, owing to the impossibility to thoroughly cleanse the rubber surface from adhering milk. In either hand milking or machine milking the purity of the milk is dependent on the following factors:

- (1) The cleanliness of the cows.
- (2) The purity of the air in the barn.
- (3) Careful milking to eliminate contamination.
- (4) Thorough washing and sterilizing of the utensils which come in contact with the milk at any period of its handling to the consumer.

The sterilizing of the milking machine was studied carefully. No figures sufficiently definite for publication were acquired. Roughly speaking, however, it is safe to say that rinsing the machine with cold and afterwards with lukewarm water will produce a bacterial count in the milk from 200 to 500 times as great as good careful hand milking, whereas the careful rinsing in cold and then hot water containing a good washing soda, and this followed by a thorough cleansing with the brushes provided, the steam sterilizing of all metal parts, and the sterilization of all the rubber parts in a 10 per cent salt solution, 5 per cent limewater solution, or $2\frac{1}{2}$ per cent formalin solution will give far more satisfactory results, and if other precautions are taken the bacterial count should not range above five or six times that of careful hand milking.

PATHOLOGICAL EFFECT OF MACHINE ON COWS

No ill-effects whatever on the cows' teats resulted from the use of the milking machine. After the machine commenced in the test a case of what appeared to be contagious garget was noticed. This rapidly disappeared and the cow came back to nearly her normal flow. Several other cases appeared shortly after, but, although the best pathologists were consulted regarding this matter, and the milk was studied carefully bacteriologically, yet, unfortunately, no organisms were isolated. It would appear, however, that this was a form of contagious garget, and could in no way be charged to the machine. The great disadvantage of any milking machine in a herd where contagious garget prevails is not that the machine induces this trouble in any sense, but is due to the fact that the machine may be spreading this trouble for one to two milkings before any thickness is noted either in the udder or in the milk taken from the same. A careful intelligent hand milker, on the other hand, would probably notice this at once, with the result that in the

future this cow, until cured, would be milked last and would probably be isolated from the other cows, her milk being also kept separate. This is an unfortunate fault of mechanical milking, but can be quite largely overcome by the careful observation of the man operating the machine.

PRESENT EXPERIMENTS WITH MILKING MACHINES

In October 1st, 1914, a new series of experiments was started, comparing good hand milking against the Burrell-Lawrence-Kennedy milker and the Sharples machine. In addition to these two machines three newer models, namely, the *Omega*, the *Empire*, and the *Lister* milking machines, are also installed, for comparative purposes. The first year of this second series of experiments with milking machines is for the comparison of the various machines with each other and with good hand milking. As yet, only eight of the experimental periods out of a total of twelve have been completed, and it would be unwise to give these data without the more conclusive duplication in the latter part of the experiment.

THE DIVISION OF HORTICULTURE

VEGETABLE GARDENING

BY M. B. DAVIS, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

AMONG the outstanding new features of the experimental work of the Horticultural Division, is the "Skinner System of Irrigation" which is just nearing completion.

This system is an overhead method of irrigating and is one that is being largely used by market gardeners in the United States. The whole area devoted to the growing of vegetables in this Division has had this system of irrigation installed this season. The area comprises some seven acres

so that a reliable test as to its merits is anticipated. As the installation was not completed until just recently it will be impossible to carry on any extensive experiments along this line this present season, but a few experiments in irrigation and non-irrigation are under test at present. Another year more space can be devoted to this line of work. At present it is impossible to give the exact cost of installing the system, but this information will be available at an early date.

POTATO EXPERIMENTS

Besides the variety testing of potatoes, experiments with potatoes are being conducted as follows:—

1. Comparison of the yield of Ottawa grown seed potatoes with the yield from the same varieties grown at the Experimental Farm at Fredericton. To date, the Fredericton seed, which was originally from the same source, is showing up to much the better advantage.
2. In an endeavour to grow seed of good vitality at Ottawa, a plot has been set aside which was mulched with

straw before the plants showed through the ground. This straw mulch is about four inches deep after settling, and it is thought that this mulch will so regulate the moisture condition in the soil as to prevent the tubers from reaching too early a maturity, which is considered the reason for the poor vitality of Ottawa seed.

3. In further connection with the growing of seed potatoes, different dates of planting the tubers for seed purposes are being tried out. Plantings as late as July 10th were made. The seed from these plots planted at different dates will be tested next year as to vitality and productiveness.

PLANT BREEDING WORK

BY A. J. LOGSDAIL, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

THE plant breeding work now being undertaken in the Horticultural Division consists chiefly in isolating and selecting the new hybrid types of early sweet corn. The crosses were made in 1913-14; the progeny of these crosses are now showing their general characteristics.

A number of crosses previously made with melons with the object of combining the qualities of size, firmness, productivity and sweetness in a suitable melon for greenhouse or frame culture are now fruiting. Amongst the progeny there have been a number of very promising seedlings, and interesting information has been secured on the influence of certain varieties as parent plants.

The crosses made in strawberries between our native species and several of the best of our commercial

varieties are now growing under field conditions, and give promise of something good, though considerable variation is evident.

The breeding work in peas, beans, and tomatoes consists chiefly in pure line and individual plant selections. A good season so far gives indications of very heavy yields from the pea strains. The late frosts in May retarded the tomatoes, but satisfactory weather since has greatly improved the appearance of this crop.

Some scientific work on colour inheritance is being carried on with Petunias and sweet peas. It is hoped from this work to obtain some instructive data regarding the definite or indefinite potentiality of male and female parent stock in influencing the character of their progeny.

ORNAMENTAL GARDENING

BY F. E. BUCK, B.S.A., ASSISTANT TO DOMINION HORTICULTURIST

DURING the winter of 1914-15, many of the half hardy plants, including the Hybrid Tea Roses, suffered considerably from winter killing. At the present time, however, very little of the loss due to this injury is noticeable on the ornamental grounds and in the test plots at the Central Farm. New importations of roses were made in the spring to fill all vacancies in the

rose garden, and there was a fine show of bloom during the month of June; many of the newer Hybrid Teas continued to bloom during the early summer, and will give a second display during August and September. Amongst the new importations are several varieties which are seen in Canada for the first time this year.

Amongst the large collection of

from three hundred to four hundred varieties of annual flowers which have been tested at the Farm during the past few years, the practice has been continued this year, as hitherto, of including about two dozen varieties of "new or little-known" flowers which have not hitherto been grown in Canada. A dozen plants of each of the several hundred varieties of annuals are grown and during the months of July and August they make a very interesting and attractive display of colour in the test plots.

One hundred and fifty varieties of the best sweet peas are under test

again this year; in addition to the varietal test of sweet peas, several experiments in the way of cultural methods and methods of training to different kinds of wire, are being tried out.

One hundred of the best China Asters from all the leading growers are also under test, together with several hundred varieties of Gladioli, including the newer introductions, as well as representative collections of Cannas, Geraniums, Dahlias, and groups of somewhat similar important plants grown as annuals.

THE DIVISION OF CEREAL HUSBANDRY

HARVESTING THE EXPERIMENTAL PLOTS

BY G. G. MOE, B.S.A., ASSISTANT TO THE DOMINION CEREALIST

THE present season has up to date been a very favourable one for the growth of cereals on the Experimental plots at Ottawa. The cool weather with scattered showers has encouraged a heavy growth of straw, and, if the proper weather prevails until time of cutting, a heavy yield of grain should be harvested.

The present time is an opportune one to draw attention to the methods employed at the harvest season in maintaining the purity of the various varieties and strains of grain. With hundreds of different strains under test and observation, varying from the plot not over a square yard in size, containing the progeny of a single plant, to the large sixtieth acre plot with which the final determination is made as to the value of a variety or strain it will be clearly seen that rigid precautions must be observed in order to maintain the absolute purity of the selections.

"Rogueing" is recognized by experimentalists as an essential in keeping varieties distinct, and is done between the time of heading out and the time of cutting. At this

period it is comparatively easy to observe differences in the shape of heads, the degree of beardedness, the absence or presence of down on the chaff, the difference in colour of glumes, the degree of maturity and other characters which aid the experimentalist in purging his strains of variations and foreign varieties.

At time of cutting, all broken and lodged heads are removed from the paths. The grain is cut with a cradle, alternate plots being cut if the maturity of the varieties permit. This leaves a standing plot between each plot harvested, which prevents any chance of cut heads getting into the next plot. The grain is stooked at alternate ends of the plots, which minimizes the danger of heavy winds sweeping two or more plots together. Large sheets which hold the product of one plot are used in conveying the grain to the thresher.

To many the actual problem of threshing presents the most serious difficulties. With hundreds of plots to thresh it is essential that work must proceed quickly, consequently a mill has to be used, to the innermost parts of which access is easy,

and from which all unnecessary cracks and corners have been eliminated. The ordinary threshing machine has proven itself too cumbersome and difficult to clean to be of effective use in threshing plots.

The thresher now in use is one devised by the Dominion cerealist, Dr. Saunders. While of a smaller type than the ordinary mills, it combines ease of cleaning with effective threshing. The interior part can be quickly removed leaving only the shell of the mill. The work of cleaning is facilitated by an electric blower to which a long rubber pipe is attached somewhat like a hose, which enables a strong current of air to be directed into any part of the mill, thus dislodging any stray kernels which may have escaped the brooms of the cleaners.

For the very small multiplying plots, a still more open mill is used. This practically consists of a cylinder, a sieve and a box, the grain and straw falling on to the sieve which vibrates back and forth making a separation of grain and chaff from the straw. The chaff is removed from the grain by means of another machine called an aspirator, which is so constructed that the grain falls downwards over a series of ledges, while a continuous draught of air passing upwards through the falling grain sucks all the chaff and light material upward and over into a large hopper. This machine makes a thorough separation with no danger whatever of any kernels of grain lodging in any part to contaminate the next lot of grain that is passed through.

THE DIVISION OF POULTRY HUSBANDRY

PROGRESSIVE OPERATIONS

BY F. C. ELFORD, DOMINION POULTRYMAN

THE Poultry Division of the Experimental Farm is making considerable improvement and addition to the buildings, equipment and stock on the central plant at Ottawa and also at the various branch farms and experimental stations throughout the Dominion.

At the Central Experimental Farm the old poultry houses are being demolished. These houses have been in existence for about twenty-five years and for a considerable time have been out of date. They also stood in the way of other buildings that were needed and interfered with the general rearrangement of the plant that has been contemplated. The new administration building will not be built this year but temporary offices have been arranged in the store house that was erected a year ago. Besides several new types of colony houses, three permanent

"farm poultry houses" holding one hundred hens each are being built on the central plant, and a house sixty feet long by fourteen wide for the ducks and geese is being erected on the turkey and waterfowl plant.

Plans of these houses are available for those wishing to build anything of a like nature.

At the majority of the branch farms and experimental stations complete equipment is being established this summer. This equipment will include what is known as the administration building in which the incubators, feed, storage and office are located; brooder house suitable for indoor hovers and large room heaters; permanent poultry house or houses designed for the use of a farmer who keeps a flock of one hundred hens; various styles of colony houses for growing stock and laying hens.

The stock at the Central Experi-

mental Farm has been materially increased during the last year. Formerly, between two and three hundred laying hens were kept, while this winter it is expected that seven or eight hundred will be accommodated. At the branch farms there will be accommodation for about three hundred laying hens. Some of the farms keep only one breed, while others, depending upon local conditions, may have two or three different varieties. At the Central Farm in addition to work with ordinary fowl, experiments are being carried on with turkeys, geese, ducks and guinea fowl and at several of the branch farms, particularly in the prairie provinces and high parts of British Columbia, turkeys are receiving considerable attention. At several of these farms quite large flocks of young turkeys are being handled this year and so far no serious trouble has been reported while at Ottawa the turkey crop up to date promises to be highly satisfactory.

During the past two years, experimental work has been carried on with various styles of poultry house and a bulletin will be issued this fall giving the results of these experiments, also plans and particulars of

the houses that have proven most satisfactory.

Numerous experiments of a different nature have been in progress. These have included the relative value of eggs or day old chicks for shipping, express or parcel post; shipping of eggs in the various stages of incubation; marketing of stock, especially green ducks and broilers; the best means of catering to a new-laid egg trade; how best to produce the stuff and how best to put it into the consumers' hands; experiments in incubation, fertility, brooding, rearing, feeds and feeding, mortality in chicks and ducklings, and many others, all of which will be reported.

Practically no stock or eggs are sold from the Central Farm as the surplus is supplied to the branch farms and experimental stations from which, stock and eggs are sold at reasonable rates to the farmers in the community as long as the supply lasts.

The poultry division of the experimental farms system is fast getting into a position where it will be able to give information gained by practical experience on all questions of production.

THE DIVISION OF CHEMISTRY

SEAWEED AS A FERTILIZER

BY FRANK T. SHUTT, M.A., DOMINION CHEMIST

THE European war has, for the time being, cut off from the Canadian market, and indeed from the markets of the world, the supply of potash furnished by the Stassfurt mines. These mines, situated in Germany, have been for many years the sole source of the potash compounds used for fertilizing purposes.

A consideration of the various home sources of potash that may be employed to supply the present

deficiency has been attempted in Circular No. 7 (Experimental Farm Series), copies of which are still available. Prominent among these sources are the seaweeds that abound on both the Atlantic and Pacific seaboard. Seaweeds are essentially a potassic fertilizer, but they also possess notable percentages of nitrogen, in addition to small amounts of phosphoric acid and other elements of plant food. Hence to a certain degree they constitute a com-

plete fertilizer. Further their manurial value is enhanced by their ready decomposition in the soil. In the fresh condition they may be applied directly to the soil and excellent results obtained, for their plant food constituents are readily made available for crop use.

But the watery character of the fresh seaweed limits its use to those farmers living near the shore, for the freight charges, if it were taken to any distance inland, would exceed the value of the material. Fresh seaweed contains from 65 to 85 per cent of water.

To ascertain if this useless water can be economically got rid of, and a fertilizer prepared in the form of a dry powder suitable for broadcasting or application in the drill, experiments were instituted some two months ago at Clarke's Harbour on the south coast of western Nova Scotia, using for the purpose of the experiment the Dog-fish Reduction

Works situated at this place. An abundance of the raw material exists in the vicinity of the works, making this a favourable locality for the experiment. The investigation is still in progress and results as to cost of production per ton of the prepared fertilizer are not yet available. Many difficulties have been met with both in drying and grinding, but these for the most part have been successfully met. Special machinery, though of a simple character, had to be devised and modifications in the several processes involved from time to time had to be made. But the work has sufficiently advanced to permit the statement that the outlook for the successful solution of the problem is most promising. A considerable quantity of the finished product has already been obtained, and its analysis as well as its physical condition go to show that it will prove a valuable manure, rich in potash and nitrogen.

THE ENTOMOLOGICAL BRANCH

TWO SERIOUS FRUIT PESTS NEW TO CANADA

BY C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST

DURING the month of April, 1915, Mr. R. C. Treherne, Field officer in charge of the Dominion entomological laboratory at Agassiz, B.C., reported the discovery in British Columbia of two new serious insect pests of fruit whose establishment in Canada has not hitherto been recorded. Early in the month Mr. Treherne discovered an infestation of the Currant Gall Mite (*Eriophyes ribis* Nalepa) a European pest introduced into Canada no doubt from Great Britain, and at the end of the month he received specimens of the Pear Thrips (*Taeniothrips pyri* Daniel) from a locality near Victoria, B.C., an immediate examination of which dis-

closed an infestation of this insect.

These discoveries do not necessarily imply a very recent introduction of the two pests into Canada, but rather point to the importance of the presence in the different provinces of trained officers who are constantly on the look-out for an unusual insect which might otherwise be overlooked.

In the case of both these pests, which will briefly be described, action was immediately taken and is to be continued by the Provincial Department of Agriculture to restrict and control the infestations, and the control of the pests will be further investigated by the Entomological Branch.

THE CURRANT GALL MITE
(*Eriophyes ribis* Nalepa)

Although our inspectors have occasionally found currant bushes from Great Britain infested with this mite, and showing the characteristic abnormally swollen buds or "big buds," it has never been found, so far

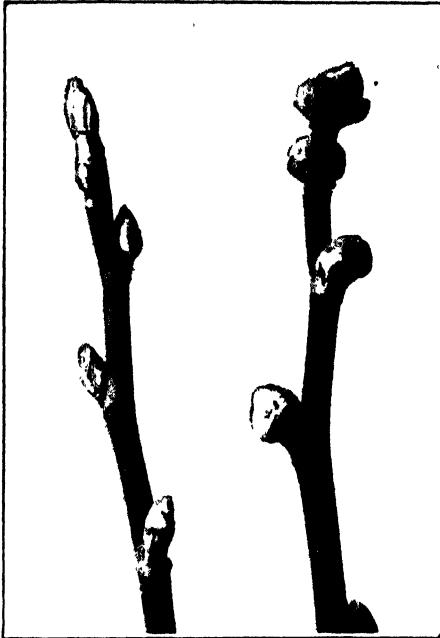


FIG. 1. SHOOTS OF BLACK CURRANT

Left—normal uninjured shoot; right—buds infested with mites causing "big bud." (After Theobald.)

as our records show, established in Canada prior to its recent discovery in an apparently restricted area near Duncans, B.C.

In England this mite is one of the most serious fruit pests, and the damage it has done has been so great that the growing of black currants has been rendered impossible in some districts. Its rapid spread during recent years has been due to the fact that no reliable method of eradication has been discovered.

The mite responsible for this injury is related to the Pear Leaf Blister Mite. It can scarcely be seen with

the naked eye as it hardly measures one-hundredth of an inch. These minute mites (Fig. 2) occur in enormous numbers in the buds, and their injuries to the tender undeveloped leaves cause the leaf tissues to swell with the consequent swelling of the buds by which the presence of the mite can usually be determined (Fig. 1). When badly infested the buds do not produce leaves but dry up and become brown. If only a few mites be present in the bud dwarfed shoots and leaves may be produced.

During the winter the mites shelter in the buds. In the spring, under English conditions, a migration of mites from infested buds commences about the middle of April and continues until the middle of June, and during this time the mites may be found on the green shoots of the plant, and especially near the newly forming buds. These adults lay eggs in the buds in the autumn and from these eggs the new generation hatches. Eggs may be found, however, in the buds the whole year round, but they are fewer in December and January.

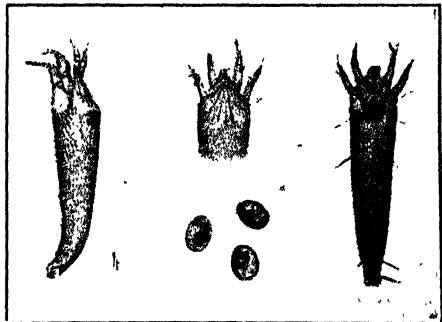


FIG. 2. CURRANT GALL MITES

Eriophyes ribis, enlarged 170 times. (After Lewis.)

The chief means of spread is by the movement of bushes from an infested plantation, or by the use of diseased cuttings. The swollen buds are often regarded as indicating a vigorous plant. The mites are spread by the wind, on one's clothes and on

insects, especially on native and hive bees which visit the infested bushes during the blossom period.

At present no means of eradication is known. The following measures will help to check the increase of the pest:

Clean stock. Only clean stock obtained from uninfested localities should be planted. Cuttings from infested plants should be rejected. Diseased bushes should be taken up and burnt if possible; additional safety would be secured by dressing the soil with lime. Severe pruning of infested shoots has proved of value.

Disinfection of cuttings. According to Pickering cuttings can be disinfected by immersing them in water at a temperature of 115° F. for ten minutes before planting.

Use of insecticides. No satisfactory insecticide has been found up to the present. Collinge reported good results from dusting the bushes with a mixture of one part of finely ground unslaked lime and two parts of flowers of sulphur. The mixture should be dusted on the trees while they are wet, beginning in the spring and repeating the dusting about three times at intervals of a fortnight. Damage to the leaves by scorching and to new plants from this treatment has been reported. Theobald reports a case where the mite was said to have been kept in check by repeated sprayings with soft soap and quassia, starting when the buds open and repeating every two weeks until the summer. It is not unlikely that spraying with the summer strength of lime-sulphur at fortnightly intervals from the time the buds begin to open would prove a useful measure.

At the present time, however, it is unwise to stop short of taking the most drastic steps possible to eradicate the pest on its first appearance, as its permanent establishment would mean a serious addition to the pests against which we are compelled at present to take action from season to season.

Suspicious cases of the Currant Bud mite of "big bud" in currants should be submitted immediately for examination.

THE PEAR THRIPS

(*Taeniothrips pyri* Daniel.)

The discovery of this insect near Victoria, B.C., is an important one, scientifically and practically. On the Pacific coast it has not been recorded previously beyond the central counties of California adjacent to San Francisco Bay, in which region it was first recorded as an injurious insect in 1904. In the infested counties it is estimated to cause an annual loss of over ten million dollars, the chief economic loss being experienced in prune orchards. Until 1911 the pest was not positively known outside California, but in the spring of that year it was found in considerable numbers injuring pear blossoms along the Hudson river in the State of New York. In 1912 it was found on pear blossoms in Pennsylvania.

The occurrence of this species in Europe is taken to support the theory that it is of European origin; but on the other hand the Orient has been suggested as its original home. Whatever may have been its native land the important fact for us is that at the present time the pear thrips constitutes "one of the most important insect pests with which growers of deciduous fruits in the San Francisco Bay region and adjoining counties have to contend," to quote the words of a recent bulletin of the United States Department of Agriculture. And the fact that the insect is injurious in the State of New York is strong evidence of its ability to become a serious pest in British Columbia if steps are not taken to control the infestation in its infancy.

Injury. The damage from this insect is chiefly confined to deciduous fruits, particularly pear, prune, plum, cherry and peaches. Its injuries are caused by the adult and larval



FIG. 3. BRANCH OF PEAR SHOWING "BLIGHTING" OF BLOSSOM CLUSTERS DUE TO WORK OF PEAR THRIPS. (AFTER PARROTT.)

thrips feeding on the buds, flowers, fruit and leaves, but particularly the buds of flowers, and by the deposition of the eggs. The chief injury to pears results in a blighting of the blossoms caused by the adults feeding in the developing bud clusters and early blossoms (Fig. 3); in the case of prunes the setting or development of the fruit is affected.

Nature and Habits of Insect. The term "Thrips" is used for a number of insects which are not true thrips. This pest is a true thrips and the adults are minute,

entirely destroyed. The eggs are laid beneath the epidermis of the fruit, leaf stems and young fruit about the time the trees are coming into full bloom, and the larvæ hatch a few days later. They become full-grown in about a fortnight, and then drop, or are blown off the trees on to the ground, into which they penetrate to the depth of a few inches and construct a small pupal cell, where they remain until they emerge as adults in the following spring. There is, therefore, only a single brood and the insects spend about two months

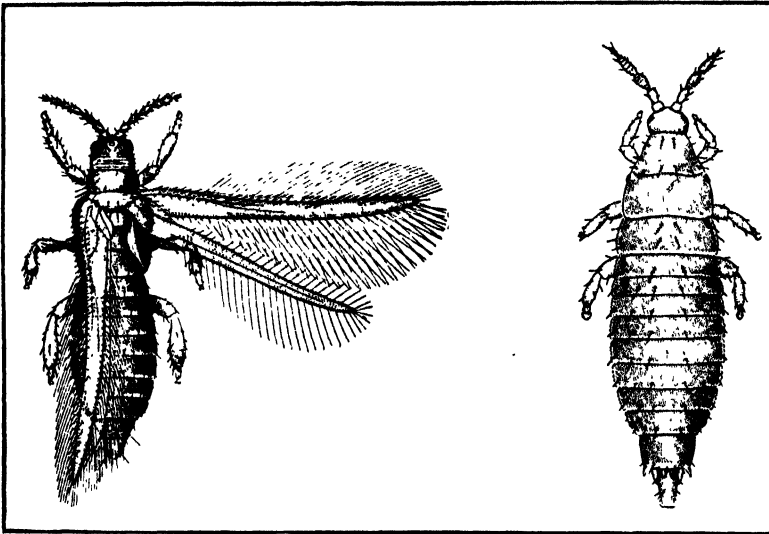


FIG. 4. PEAR THRIPS, *Taeniothrips pyri*.
Adult on left; larva on right. (After Moulton, U. S. Dept. Agriculture)

slender, dark brown insects, measuring one-twentieth of an inch in length (Fig. 4). The wings are fringe-like and carried flat along the back. Owing to the possession of peculiar jaws it feeds by rasping the plant tissues and not by biting or chewing. The winged adults leave their hibernating quarters in the ground very early in the spring and migrate to the fruit trees. After entering the swollen fruit buds they feed upon the very tender developing leaves and blossoms and if the insects are abundant the buds may be en-

of the year on the trees and about ten months in the ground.

Control. This insect is most difficult to control owing largely to the rapidity with which it commits its injuries and the shortness of the period during which it is destructive and most accessible. The most effectual means of control is spraying. This must be carried out during the period when the buds are bursting and until they are entirely open. Parrott has found that in the state of New York the most promising spray mixtures are nicotine preparations in

conjunction with kerosene emulsion or soap, and he gives the following formula:

Black Leaf 40 (40 per cent. nicotine extract).....	$\frac{1}{2}$ to $\frac{3}{4}$ pint
Water.....	100 gallons
Soap (whale oil).....	2 to 5 lb.
or	
Kerosene emulsion.....	3 gallons.

The State Horticultural Commission of California recommends a distillate oil emulsion in combination with nicotine. The distillate oil can be purchased or made at home. The formula recommended is made up of 3 per cent distillate oil emulsion, to which is added 1 to 1 2-3 per cent Black Leaf 40 at the rate of one part to 1500 to 2000 parts of the spray mixture. The distillate oil stock emulsion is made as follows:

Hot water.....	12 gallons
Fish oil or whale oil soap (it must be genuine).....	30 lb.
Distillate oil (raw) 30° to 34° Beaumé.....	20 gallons

This stock solution cannot be made without thorough agitation and high pressure, and for this purpose a power sprayer is indispensable. Pour the boiling hot water into the spray tank and with the agitator running full speed immediately add the soap. When it is thoroughly dissolved slowly pour in the oil, keeping the mixture well agitated all the time. When it is all well mixed pump out the resulting stock emulsion, through the nozzles at a pressure of not less than 175 lb. into the storage tank. To make a 3 per cent solution it is necessary to use 5½ gallons of this stock emulsion to

each 100 gallons of water, or spray solution, if nicotine is also added. To make up the spray solution pour the required amount of stock solution into the tank, having started the agitator first, and, keeping the agitator running continuously, add the water. If nicotine is added it should be diluted first and not added until the oil emulsion has been made up to almost full strength.

Three applications of the spray are considered necessary by Foster and Jones (U. S. Dept. Agriculture, Bur. Entomology Circ. No. 131) in a badly infested orchard the first year.

The spray is applied at the following times:

First. When the earliest buds are separating slightly at the tips.

Second. Four to ten days after the first; on pears just as the earliest cluster buds are shown; on prunes when the tips of the petals first begin to show. Both these applications are important and *the spray should be directed on to the ends of the buds from the nozzles held close to the clusters.*

Third. (For the Thrips larvæ) When most of the petals are falling.

Deep fall ploughing and cross ploughing followed by harrowing has also proved valuable where it can be carried out. This operation destroys the hibernating quarters in the soil.

The discovery of these two pests emphasizes the importance of constant vigilance and immediate inquiry whenever any unusual trouble or insect is discovered.

No other human occupation opens so wide a field for the profitable and agreeable combination of labour with cultivated thought as agriculture. Population must increase rapidly, more rapidly than in former times, and ere long the most valuable of all arts will be the art of deriving subsistence from the smallest area of soil. No community whose every member possesses this art can ever be the victim of oppression in any of its forms. Such community will alike be independent of crowned kings, money kings, and land kings.—*Abraham Lincoln.*

THE FRUIT BRANCH

THE MARKET PROBLEM

BY FRED H. GRINDLEY, B.S.A., ASSISTANT TO THE FRUIT COMMISSIONER

THERE is a very natural uncertainty existing among the fruit growers at present as to what will be the state of the markets during the heavy shipping period in the late summer and autumn. The general feeling is rather a pessimistic one. The European war seems to have impressed fruit shippers with the idea that the consuming public will eat very little fruit, that only staple necessities will be in great demand and that consequently the possibility of remunerative returns is a small one.

As a matter of fact those who are best in a position to hazard a forecast upon these matters strongly oppose the idea of any such situation arising. Trade Commissioners and large fruit importers in England and Scotland are of the opinion that a good demand at fair prices will prevail for fruit of sound and reliable quality. This assumption is based, first, upon the fact that there has been a moderate demand in England for the early and more expensive fruits, which are not as much a necessity of diet as apples; and, secondly, because there is now in England plenty of available employment for the labouring classes at good wages.

Fruit growers in Canada have already marketed large quantities of small fruits, and prices have been very satisfactory. It may, therefore, be assumed that our home markets will offer an equal, and, prob-

ably, a greater demand for the heavier shipments of apples, peaches and pears towards the end of the summer. There is also the promise of a large grain crop in the west, which will tend to bring about a free circulation of money. Thus we have in Canada the same two conditions upon which the optimism of authorities in Great Britain is based.

So much for supply and demand. The most obvious difficulty lies in the uncertainty of ocean transportation facilities being satisfactory. In 1814 there was, at times, an extreme scarcity of space on vessels plying between Canadian ports and Great Britain, with the result that many of the early varieties of apples could not be exported and were, in some instances, left to waste in the orchards. As long as the war continues that danger will be present, and will be the one to be most considered. So far as demand is concerned, or the purchasing power of the public, there is no indication of any reduction taking place. The average citizen has passed the "panic" stage and is not as much inclined to restrict or limit his purchases as he was at the first outbreak of war.

This branch will keep in touch with the large shipping companies and advise fruit shippers, as frequently as possible, regarding the dates of sailings and the space available for cargo.

THE DAIRY AND COLD STORAGE BRANCH

NOTES

BY J. A. RUDDICK, COMMISSIONER

THERE has been considerable comment in recent years respecting the importation of butter from New Zealand and Australia into Canada. It would appear, however, that the tables are being turned, as I have just been advised that the steamer Makura, which sailed for New Zealand and Australia on the 7th instant, carried approximately 4,000 boxes of butter from creameries in the prairie provinces, and that orders have been received by Vancouver merchants for a further shipment of 6,000 boxes by the next steamer. It seems quite likely that in the near future the output of butter from the creameries in Alberta, Saskatchewan and Manitoba will be more than sufficient to supply all western demands and provide a substantial surplus for export. The maximum importation of butter (7,989,269 pounds) was during the fiscal year 1912-13.

The Brome creamery was destroyed by fire on Sunday, July 11th. At the time of writing no particulars had been received at the department as to how the fire originated. The Brome creamery was acquired by

the Department of Agriculture in the fall of 1911. During the following year a new building was erected and equipped with all modern appliances. It has been operated by the Department as a model creamery, with facilities for conducting experiments and investigations.

A series of dairy meetings have recently been held at various points on Prince Edward Island. These were arranged by Mr. Harvey A. Mitchell, representative of the Dairy and Cold Storage Branch for the Maritime Provinces, who was assisted by Mr. George H. Barr, Chief of the Dairy Division, besides other officials of the federal and provincial Departments of Agriculture. Some of these meetings constituted picnics of the patrons of creameries. The attendance was very good throughout, numbering from 200 up to 3000 people. In these meetings occasion was taken to explain to patrons the modern system of grading cream. From the interest taken, it was expected that a number of creamery companies will establish rules and standards for cream to be submitted to patrons at their next annual meetings.

During the six months ending June 30th, 1915, Great Britain imported 6,393,100 cwt. of wheat from Canada valued at \$4,377,436 against 9,449,229 cwt. valued at \$3,793,624 in the corresponding period of 1914.

THE LIVE STOCK BRANCH

APPOINTMENTS UNDER THE NEW MARKETS POLICY

IN accordance with the new markets policy that has been adopted by the Live Stock Branch, as detailed in the July number of *THE AGRICULTURAL GAZETTE*, Mr. A. P. Westervelt, formerly chief of the live stock branch of the Ontario Department of Agriculture and secretary-manager of the Ontario winter fair, has been appointed in connection with the organization of the intelligence department of the work. It will be his duty to gather and assimilate information regarding markets with a view of providing a reliable service to the producer.

There has also been appointed to a responsible position in connection with this propaganda, Mr. George H. Pepper of Toronto. Mr. Pepper is an experienced and successful business man and, as well, one of the oldest and most widely known horsemen of America. Within the last year or two he has turned his energy and ability to an analysis of the conditions affecting Canada's agricultural trade, and has given much thought and study to the problems connected with marketing and transportation, and to this latter question he will give special attention.

THE HEALTH OF ANIMALS BRANCH

PROHIBITORY ORDER AMENDED

THE prohibition of the importation into Canada of animals, hides, hay and other products made by Order of the 9th May, 1915, under the provisions of "The Animal Contagious Diseases Act" is hereby removed, so far as concerns any of the following states, viz.: Minnesota, North Dakota, South Dakota, Montana, Washington, Oregon, Idaho, Wyoming, Nebraska, Colorado, Utah, Nevada, California, Arizona, New Mexico, Oklahoma, and Texas.

Animals and their products; also hay and straw, may be imported into Canada from any of the aforementioned States, provided they are accompanied by the affidavit of the owner or shipper that they are the product of one of the above men-

tioned States, and have not been unloaded in any State other than one of the above mentioned States. In the case of live animals, the usual requirements of the Department as to quarantine, health certificates, or mallein or tuberculin tests must be observed.

The operation of the said Order of the 9th May, 1915, as amended, is hereby extended for one month from the 9th August, 1915.

This amending Order shall be effective only on and after the 2nd day of August next.

Dated at Ottawa, this twenty-second day of July, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

TUBERCULIN TESTING AT SASKATOON

SASKATOON is the first city in Canada to have had the assistance of the Federal Government in the control of bovine tuberculosis in the herds furnishing its milk supply.

Federal aid was given under the new tuberculosis regulations adopted last year, by which any city or town with a population of 5,000 or over, and whose dairies are up to a certain standard of sanitation, may have all dairy cows tested free of charge, and the reactors removed, with compensation to the owners.

The first test of Saskatoon's dairy cows has now been completed, and some interesting facts ascertained. One hundred and one herds were tested, comprising one thousand three hundred and eighty-three cattle. Seventy-four herds were found to have no reactors to the test, and in the remaining twenty-seven herds, eighty-six reactors were found. This gave a percentage of six decimal twenty-two, which may be considered a low percentage for this class of cattle. Almost half the total number of reactors were found in three herds, the remainder being scattered among the others.

Reacting cattle have been dealt with as provided by the regulations, the owner having the choice of fattening them for beef, of having them immediately slaughtered, or of retaining them indefinitely in the herd, in the latter case not selling any but pasteurized milk. None of the owners chose the latter proposition, as all were desirous of cleaning up their herds as soon as possible. Fifty-seven reactors are now being prepared for the butcher, and twenty-nine have already been slaughtered.

A careful post mortem inspection was made of each animal as it was slaughtered, and the veterinary in-

spector, guided by the same rules as govern the inspectors in abattoirs under federal inspection, decided whether the carcass was fit for food or not. In every reactor slaughtered there was found evidence of disease. Nine cows were so badly diseased that their carcasses were condemned. In the other twenty the evidence of disease was slight, and confined to parts that are not eaten, so that the carcass was passed for food.

Under the regulations the owner receives whatever sum of money is realized by the sale of the carcass, unless this sum, added to the compensation, exceeds the legal valuation of the animal. This salvage, in the case of the twenty-nine cows destroyed amounted to \$21.16 per head, the compensation to \$20.00, making a total of \$41.16. The small amount of salvage realized is disappointing, but it must be remembered that these cows were not prepared for the butcher, and that nine of them realized only the price of the hide. The remaining fifty-seven when prepared for the butcher may be expected to bring a better price.

It is satisfactory to note the large number of healthy herds, about 75 per cent of those tested. While this should not be taken as an indication of what may be found at other places, it shows that, in some localities at any rate, the extent of bovine tuberculosis is not so great as to render its eradication impossible.

The next step to be taken in dealing with these herds is to protect them against the purchase of infected cows. Each cow purchased by one of these dairymen will be submitted to the test, and the herds will be retested from time to time as may be necessary.

On the completion of the work of testing, the city council of Saskatoon passed the following resolution:—

“That this city very much appreciates the prompt and effective response to their application to have all the cattle in the vicinity of Saskatoon tested for tuberculosis and the excellent work carried out by the assistants of the Veterinary Director General's Department.”

TABULATED STATEMENT

FIRST TEST, SASKATOON

Herds tested.....	101
Herd having reactors.....	27
Herd having no reactors.....	74
Number of cattle tested.....	1,383
Number of reactors.....	86
Percentage of reactors.....	6.22
Reactors slaughtered.....	29
Lesions of tuberculosis found in.....	29
Condemned at post mortem.....	9
Passed for food.....	20
Reactors feeding for beef.....	57

FLY TIME

VAST numbers of flies breed wherever cattle and horses are confined. Stockyards and stables, in spite of precautions, and even when extra care is taken, are generally infested with these pests.

Abattoirs, being usually quite close to the stockyards, would be full of flies during the summer months unless screens and other methods were in use to limit their number. At one of the abattoirs under government inspection the inspector in

charge kept a record of the flies caught in the fly traps in use there. These fly traps are large cylindrical affairs made of wire gauze, baited with stale beer or other delicacy, and are placed outside the doors as well as inside the building.

During the months of May, June, July, and August, 1914, 783 quarts of flies were captured, weighing 1,031 lb. As there were found to be 9,600 flies to one quart, the total number of flies caught was 7,545,600.

A suggestion having been made that farmers' institutes in British Columbia should create a fund for the purchase of machine guns, the Superintendent of Institutes, Mr. Wm. E. Scott, issued a circular to all the institutes of the province pointing out that if each member of an institute would subscribe so small a sum as fifty cents, it would be possible to supply five of these guns. Every secretary was requested to call an emergency meeting, if the executive thought proper, as speedily as possible with a view of taking up subscriptions.

PART II

Provincial Departments of Agriculture

IMPROVEMENT OF CREAMERY BUTTER

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

BUTTER and cheese have been produced in Prince Edward Island for over one hundred and fifty years, but the first cheese factory was established in 1883, and the first creamery in 1897. Subsequently cheese factories were established in Lot 49, Central Bedeque, and at St. Eleanor's, Prince County. They ran for a few years but when Professor James W. Robertson, then Dairy Commissioner, visited the province in 1891 for the purpose of introducing co-operative dairying, St. Eleanor's was the only factory in operation. On June 22nd, 1892, the first cheese factory organized on the co-operative plan was opened at New Perth. It closed for the season on October 31st, having manufactured 66,089 pounds of cheese. The following year a number of factories were opened, all of which were operated on the same plan but under government management and inspection. In 1897 government operation was nearly given up, and, two years later, government inspection was dropped.

In order to secure a uniform make of butter and cheese throughout the province, and also to raise the quality of the output to the highest point of excellence obtainable, inspection and

instruction had to be provided, and at a meeting held in Charlottetown for that purpose on March 4th, 1899, the Prince Edward Island Dairy Association was organized. Under this Act an instructor was appointed whose duty it was to "enter the various cheese and butter factories in the province making cheese and butter for export, and to inspect the premises, apparatus and utensils, the quality of cheese or butter manufactured, and to examine the quality of the milk delivered at the factory by the various patrons, and to make a full report of his inspection with such recommendations as he might see fit to the president, manager, or secretary, of the respective factories, and also to the secretary-treasurer of the association."

To pay the salary of the instructor, the Federal Department of Agriculture agreed to make a grant of \$300 to the association, the Provincial Government a grant of \$300, and the association was empowered to levy an assessment on every factory making cheese or butter for export, the assessment to be made in proportion to the quantity of milk received at each factory during the year preceding the annual meeting. Mr. Fraser T. Morrow, of

Charlottetown, Prince Edward Island, at that time one of the most prominent cheese makers in the province, was appointed inspector, and has continued in that position ever since.

There are now about 46 cheese factories and creameries in operation in the province. Mr. Morrow visits these as frequently as possible, giving special attention to those in which the makers have had little experience, or who, for some reason or other, are having difficulties. He endeavours to see that the factory is kept in the best possible condition and that the cheese and butter are of the best possible quality. His instruction, however, is not confined to the makers. He endeavours to instruct the patrons as far as possible in the best methods of handling milk and cream, and endeavours to have the product received at the factory as good as possible. The Federal Department of Agriculture has also been co-operating in this respect. In the past years they have arranged for a dairy school at

Sussex, N.B., and paid the travelling expenses of makers from this province. In addition, the representative of the Dairy Division of the Dominion Department of Agriculture in this province, Mr. Harvey Mitchell, has distributed among the patrons of creameries the following rules for the care of cream:—

1. Skim only in a clean place, free from odours.
2. See that the separator and utensils are washed absolutely clean and scalded every time used.
3. Skim the milk as soon as possible after being drawn to ensure close skimming—adjust the separator to give a cream containing not less than 30 per cent butter-fat.
4. Cool the cream at once to 50 degrees or under, but in no case allow cream to freeze.
5. Do not mix cream with that of a previous skimming until cooled to 60 degrees or under, and stir well every time fresh cream is added.

There is still a lot to be done to improve the quality of Island butter, but most of this work has now to be done with the patrons of the creameries.

NOVA SCOTIA

BY W. A. MCKAY, DAIRY SUPERINTENDENT

FACTORY dairying along co-operative lines is still in its infancy in Nova Scotia, practically all the development having taken place in the last five or six years.

Previous to about 1908 whole milk creameries and cheese factories had been attempted in almost every part of the province, but only in a few cases with success. The province is rather sparsely settled, the cow population is limited, the roads for the most part run irregularly, the cows in general freshen in the spring, and the co-operative spirit had not been largely developed.

Fortunately, however, the cream-gathering creamery solved a number

of these problems, and this is the type of creamery which in the past five years has led to an increase in the factory butter production of Nova Scotia amounting to 36 per cent.

The first creamery started on this cream-gathering plan was the one at Scotsburn, a creamery which had been running for some six or seven years with annual deficits every year. Six years after this creamery was changed from a whole milk to a cream-gathering creamery the output increased nearly 2,000 per cent. Better still the type of cows was improved; individual farmers made larger returns from their cows, and the result has been an unqualified success.

The Nova Scotia Department of Agriculture, recognizing that the day had come for development and also feeling assured that the cream-gathering creamery would solve problems which had led to failure in previous years, organized a Dairy Division and appointed a dairy superintendent some three years ago. The result has been that ten new creameries have been organized since that time all on the same co-operative plan and all promising to make a decided success. Only in one or two sections has the local or whole milk creamery plan been adopted.

The following are some of the duties which the dairy superintendent with his assistants is endeavouring to accomplish:—

To give such assistance as is needed to the managers of creameries in order that they may manufacture the finest quality of butter.

To organize new companies, and to see that they are properly situated to cover the whole of the province in the most economical way, and to prevent as far as possible creameries from invading the territory of other creameries.

To see that the site and plans and specifications of each creamery erected are the best to serve the interests of each locality.

To keep a close check on all butter that is sold with special reference to controlling the quality.

To stimulate a higher production of milk per cow.

To do everything possible to further the dairy interests of the province.

The Nova Scotia Dairymen's Association was organized two years ago with the object to bring factory-men closer together to discuss their problems.

Dairy legislation was passed at the session of 1914. The principal clauses are as follows:—

Providing for bonuses to new factories under certain conditions.

Empowering the dairy superintendent to take over the management of any creamery in whole or in part as may be decided upon.

Empowering the Dairy Division to build demonstration creameries.

That all cream shall be paid for according to the Babcock test.

That all samples of cream shall be weighed for testing with the Babcock test.

That all cheese factories and creameries shall be registered after the first of May, 1915.

That refusal of registration may be based on unsanitary conditions or improper methods of manufacture.

That no cheese factory or creamery shall be built until the plans and specifications have been approved by the dairy superintendent.

The result is that all new creameries are in a satisfactory condition to manufacture a good quality of butter.

The cost of plants complete has ranged from \$4,000 to \$12,000.

In the development of this policy the Federal Department of Agriculture has co-operated splendidly with the Provincial Department of Agriculture, the officials holding joint meetings and doing all in their power to promote increased milk production and the better manufacture of cheese, butter and other dairy products.

A separate policy is being developed in Cape Breton, the Department building and operating the creameries for a term of years under certain conditions. One creamery is now in the second year of its existence and has fully justified its being started; another is being built this year, and if the policy works out right no doubt the whole Island will eventually be covered.

Cream grading has been started this year in one of these creameries which has been built by the Government, and if it continues to work as satisfactorily as it is doing at the present time it will be advocated

for all the creameries in the province next year.

Little trouble has been experienced so far from inferior quality of butter, as very little is exported.

The climate is ideal, nights cool, good water and good pasturage, but from the Department's standpoint quality is considered the first essential, and watched very closely, and, when any complaint comes in, a visit is made at once to the creamery and the trouble ferreted out.

The heartiest spirit of co-operation exists between the factorymen and all concerned, and it is on the continuance of this feature that it is hoped to develop the dairy business.

In the carrying out of this policy which is now yielding such splendid results the local Department of Agriculture has been materially assisted by an appropriation from the Federal Government made under THE AGRICULTURAL INSTRUCTION ACT.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

DEALERS in butter in New Brunswick have had much reason for complaint that the butter produced in this province was often poor in quality and especially lacked uniformity. There has been no system of inspection or means by which the poor butter maker could be marked and his butter recognized on the market. The good and careful butter makers, of whom we have many, have suffered because of these facts.

The Dairy Act of the Federal Government, which recently came into force, was very generally welcomed by those producing a good article of butter, and is generally opposed by the poor and careless maker. The officials in this province are earnestly endeavouring to enforce the law and they believe that good results will follow.

In 1906 there were forty-one creameries in operation in the province. These produced 967,203 pounds of butter during the year. In 1909 the creameries had been reduced to sixteen and the product had fallen off to 644,779. That was the "low water" mark in the dairy business in the province. There has been an increase each year until we now have twenty creameries, with an out-put last year of 1,090,501

pounds. The Department of Agriculture has adopted a new policy, discouraging the establishment of small creameries and advocating the large, central creamery, with cream routes, with the idea of remedying the conditions of the past and producing a better and uniform quality of butter. The farmers in Madawaska county have taken up the idea of amalgamation and several of their creameries have been abandoned and a large central creamery has been established at St. Hilaire. It will be in operation this year and we are watching the experiment with much interest. If it works out as well as it is hoped for, this policy will be generally adopted throughout the province and large creameries at central points, serving as large an area as possible, will be established. This Department has placed a dairy instructor and inspector in the territory served by the creamery in Madawaska county, and during the summer months all his time will be given to assisting and instructing the farmers in the proper method of producing and handling their milk and cream. Dairy superintendents now make regular visits during the producing season to all the creameries in the province, and are endeavouring to overcome many of the faults in butter production of the past.

QUEBEC

BY J. D. LECLAIR, GENERAL INSPECTOR OF CREAMERIES

THE Dairy School of St. Hyacinthe was established in 1893 by the Dairymen's Association of the province of Quebec. It was intended to take the place, as a permanent structure, of the travelling school of about the same kind which had been operating for some years previously.

By special understanding with the association, the management of the institution was at first assumed by Professor Jas. W. Robertson, who kept it during three years. As soon as the school was in good working order, the management of it was handed over to the Dairymen's Association.

For the last few years the school has been under the direction of the provincial Department of Agriculture, which has assumed the whole management.

One of the first objects of the school was to make an investigation into the condition of the cheese and butter industry in Quebec, to ascertain the distance between our producers and the best known producers in competitive countries.

The methods in use elsewhere were introduced and generalized in the province of Quebec, with the necessary modifications, only after their suitability to our local conditions had been carefully ascertained.

The St. Hyacinthe dairy school has never introduced and recommended a new method without first securing the opinion of Montreal dealers, based on the quality of the products obtained. Of course this mode of proceeding was necessarily slow, but it saved a great many false steps, and prevented too hasty or unfavourable impressions.

TEACHING PASTEURIZATION

Since 1907 the provincial dairy

school of St. Hyacinthe has officially recommended the pasteurization of cream as a necessary purifying process before this cream is manufactured into butter. Pasteurization checks the growth of undesirable germs and creates a more favourable medium for the action of lactic ferments called "pure culture ferments."

Butter makers following the short winter courses have been taught along these lines. They have seen the results attending this method; they have learned how to apply it and it is now very gratifying to us to see that pasteurization is applied in all new factories and introduced in a great many old ones.

QUALIFICATION OF MAKERS

As the value of the teaching given by the St. Hyacinthe dairy school became known among the public interested in the improvement of dairy produce, some guarantee of competence and skill in the makers was urgently asked, and measures were taken by the school to satisfy these very legitimate requirements.

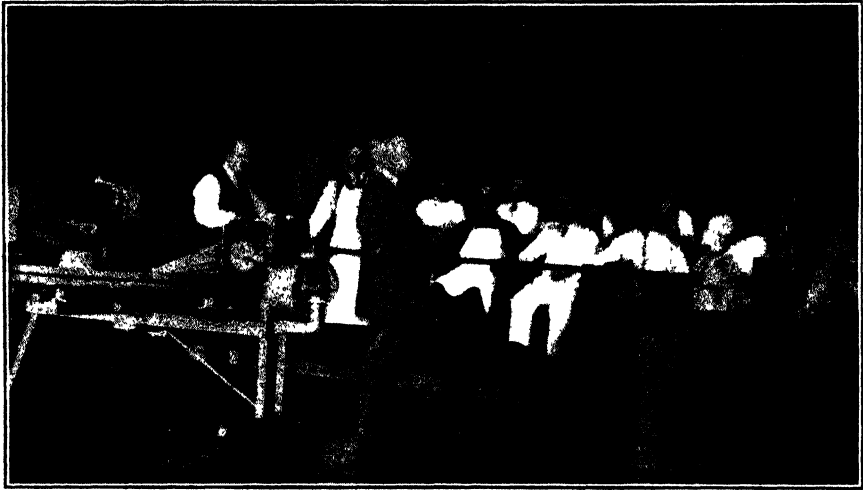
The school has a board of examiners who are sitting almost continuously during the winter courses; the makers are submitted to a written and verbal examination and to a practical test regarding the testing of milk and cream. When these makers are doing practical work during the season, delegates are sent by this board to see them at work and to find out to what extent they apply the teachings of the school. The granting of the maker's diploma will depend upon this visit. If the practical work does not correspond to the result of the written examination, or vice versa, the maker does not receive his diploma. An unsuccessful applicant

may, however, try a second or even a third examination.

Makers who show unwillingness to comply with instructions, who are guilty of habitual negligence, or who do not observe the law and regulations, are struck out of the list of qualified makers, and their licenses and diplomas are withdrawn on the recommendation of the board of examiners by whom they were given. A list of such withdrawals is prepared every year and published far and wide for the knowledge of the public.

of the same methods in all parts of the province, and the uniformity which has been the result of this work is a matter for surprise to all dealers visiting our country.

Inspectors had something else to do than to take up the technicalities in the making of butter and cheese. A new and uncontrolled industry is bound to develop some objectionable practices, which, sooner or later, are declared to be abuses. Our dairying industry had to suffer from these mistakes. Owing to its intimate connection with domestic in-



THE PROFESSOR TEACHING HOW TO PREPARE AND USE FERMENTS

THE PART PLAYED BY THE INSPECTOR

Of course the results obtained up to this day cannot be entirely attributed to the teachings of the St. Hyacinthe dairy school, but are also due to the system of factory inspection which has been operating for over twenty-five years in Quebec. Inspectors who are appointed from the best makers to visit the factories closely watch the various processes of manufacture, and, when required, demonstrate the value of the methods taught at the dairy school. This teaching, this supervision, and these demonstrations, have contributed to the general dissemination

dustries, it was the scene of serious abuses, to a larger extent, perhaps, than in other industries, and these abuses very firmly implanted themselves.

Chief among these abuses is the extraordinary number of buildings used for the making of butter and cheese, a great many of which are necessarily poorly equipped and poorly built. The inspectors having been created health officers by a provincial law, they make themselves familiar with the regulations of the provincial health board concerning the sanitation of such buildings, and the good effect of their

work is soon felt. These special regulations provide for the washing of the utensils, for the cleaning of contaminated places, for the collection of all residual waters, and the removal of these waters according to the permeability of the soil and slope of the surface.

By-products returned to the farm must be pasteurized.

REGISTRATION OF FACTORIES

All butter and cheese factories must apply for registration to the Department of Agriculture and provide a certified statement regarding their situation. A factory applying for registration is visited by an inspector, who makes a statement of the quantity of milk that is likely to be received, of the suitability of its plant and equipment, and grants registration if the conditions are judged satisfactory.

PREVENTIVE MEASURES AGAINST ABUSES

The "gathered-cream system" has given rise to abuses which are not perhaps so bad in the province of Quebec as in the United States, or possibly in the western provinces; but human nature is about the same everywhere, and it has been judged necessary to take preventive measures against these abuses and to correct them.

The amendment to the factory law—as published in the April number of THE AGRICULTURAL GAZETTE—contains a summary of the first measures which, in our estimation, will show the dairymen that they are branching off in a wrong direction. It will not be necessary to reproduce this amendment. I want to point out, however, that the general inspector is authorized by this law to make regulations with a view to obtain the desired result. These regulations, which were sent with a copy of the amendment

to all butter and cheese factories of the province, are as follows:—

DEPARTMENT OF AGRICULTURE PROVINCE OF QUEBEC

Regulations concerning the classification of cream, the making of butter, etc., in accordance with the authorization given the inspector-general of creameries by article 2031g, amending the Revised Statutes of 1909, respecting the Dairy Association of the Province of Quebec and the manufacture of dairy products.

1. The classification of cream shall be based on its flavour and odour, its fat contents and its acidity when delivered at the creamery.

- (a) In order to be classified as No. 1 or 1st class, cream must have an agreeable odour, a mild and clean flavour, with at least 35 per cent of fat, and an acidity not exceeding .20.
- (b) Cream shall be classified as No. 2 or 2nd class when its odour and flavour are not very agreeable, when the percentage of fat is not below .30 and its acidity does not exceed .24.
- (c) All cream which cannot be accepted in either of those two classes shall be returned to the farmer to whom it belongs and who has produced it. The apparatus for ascertaining the percentage of fat in cream shall be either the "Babcock" or the "Gerber;" those for ascertaining the acidity shall be the "Dornic" or "Touchoth" acidimeter.

2. As the federal law expressly forbids the use of preservatives for preserving milk and cream, every infraction of this kind must be reported to the inspector-general by the head maker of the creamery.

3. The head maker must keep a special register for entering all ascertainment of percentage of fat, acidity and good or bad odour and flavour of the cream received. He shall, when necessary, send copies of such ascertainment to the secretary or treasurer of the patron's district, and also to the president of such district. The district inspector, or the inspector-general, or any officer duly authorized by the Department of Agriculture, shall have the right to examine such register.

4. As the cream must be delivered at the creamery in the producer's can without being mixed with any other, the owner of the creamery must wash out the can very carefully and sterilize it with live steam immediately after washing.

5. The license or diploma as butter or cheese-maker and the certificate of expert

tester of milk and cream, held by any head maker of a factory, shall be cancelled if such maker does not conform to the present regulations.

St. Hyacinthe, 18th March, 1915.

J. D. LECLAIR,
Inspector-General of Creameries.

These regulations have been approved, after having been studied by the members of the Board of Examiners of the Dairy Association of the province of Quebec.

EXAMINERS
(Signed) { J. D. LECLAIR,
ELIE BOURBEAU,
J. A. PLAMONDON.

St. Hyacinthe, 18th March, 1915.

The whole province is covered by the inspection and, as each factory is visited by an inspector several times during the season, the law will be explained to the makers, and it is highly gratifying to see the favourable disposition shown by our cheese and butter makers.

ONTARIO

BY G. A. PUTNAM, B.S.A., DIRECTOR OF DAIRYING

BEFORE outlining the action which is being taken to make uniform the standard of creamery butter in Ontario it is well to review briefly the development of the industry in the province. Twenty-five years ago the proportion of creamery butter to dairy butter was much less than at the present time. By "dairy butter" we refer to that made on the farm from the milk produced on the same farm. The proportion of this is materially decreasing. This butter is usually marketed in the local grocery, but an increasing number of producers have regular customers in the large centres of population.

The manufacture of butter on a large scale at a central plant has at least four advantages—first, lessening the labour on the farm; second, the manufacture of a high grade of butter of uniform quality; third, provides fresh skim milk for the young things on the farm; fourth, regular returns in the form of cash. These advantages have resulted in a growth from 115 creameries with an annual output of 3,200,000 pounds of butter in 1894, to 161 creameries with a product of 22,425,000 pounds of butter in 1914. While the number of creameries has increased considerably during the past twenty years, the output from the individual plant has grown much

more rapidly. Twenty years ago much of the creamery butter was churned from the cream separated at the creamery, with the result that the maker had raw material, uniform in age and per cent of butter fat. His problems were much more simple than those of the maker of to-day, who has to depend upon cream separated in a variety of ways, varying in percentage of butter fat, and kept for indefinite periods before being delivered to the creamery. The farmers have come to value very highly the skim milk for the young stock and chickens on the farm and are prepared to take a little less, if need be, for the butter produced rather than have the skim milk taken from the farm altogether or returned to him when it is near or at the souring point.

Our problem, therefore, in Ontario is how best to manufacture creamery butter on the "cream gathering" plan. Theoretically, as fine butter should be produced under the "cream collecting" as with the "whole milk" system. Practically, it is more difficult to produce uniform quality under the former system compared with the latter. Our dairy schools, dairymen's associations, institutes branch, staff of dairy instructors and other interests have put their shoulder to the wheel to make the best out of what is not an altogether desirable condition so

far as the production of first grade creamery butter is concerned. That the work has been fairly well done is evidenced in the fact that during 1914 the difference between the prices received for Ontario creamery butter and Quebec butter made on the "whole milk" plan was only a very small fraction of a cent a pound. This difference was more than made up to the farmers in the fresh skim milk available for the young stock.

The agencies utilized in dairy instruction in the creameries are the dairy schools at Guelph and Kingston, a staff of six instructors being employed to visit the creameries as special lecturers.

The course in the dairy schools cover the following: cheese-making, butter-making, separation of cream and milk, milk and cream testing, dairy bacteriology, dairy chemistry, mathematics, feeds and feeding, breeds and breeding, care of boilers and engines, pipe fitting, and general dairy science.

The instruction in these subjects where permissible is made as practical as possible, no theory being taught but what can be put to practical demonstration.

A series of lectures is given by the various instructors in charge of the different departments covering their particular branch or subject. These lectures are further amplified by practical demonstrations conducted by the students themselves under the supervision of the instructor. This practice eliminates the possibility of teaching a false theory, as every theory is put to the proof of *Practical Application*. For this practical work provision is made for an ample supply of milk and cream which is delivered to the School each day, so that in a manner the School might be termed a proving ground where no information is given excepting that which has stood the test of application.

Well stocked libraries are also maintained for the use of the students and are much patronized by them.

At the close of the course, examinations, both practical and written, are given for the benefit of those students wishing to secure diplomas from the school. Having passed this examination, they are further required to conduct satisfactorily, for one season following, a cheese factory or creamery before being given a diploma. This practice adds not only to the reputation of the graduates but to the school as well and puts a value on the diplomas which they otherwise would lack.

The Bacteriological Departments of the Ontario Agricultural College and Queen's University render valuable assistance to the creameries of the province by:

- (a) Instructional work.
- (b) Investigation and research.
- (c) Examination of samples sent in.
- (d) Distribution of cultures for cream ripening.
- (e) Preparation, etc.

In the work of instruction particular emphasis is laid on the importance of the adoption of sanitary methods in the dairy to ensure for its products cleanliness, quality and freedom from the germs of disease. The value of pasteurization is demonstrated, and the use of pure cultures of lactic acid germs to control the fermentation in cream and milk which is to be converted into butter and cheese. Students in the regular college and special courses, many of whom become creamery patrons in after years, receive instruction on the sanitary production of milk and cream and the care of these products in the home and on the farm.

Investigational work of some of the present day dairy problems is carried on as time and opportunity permit.

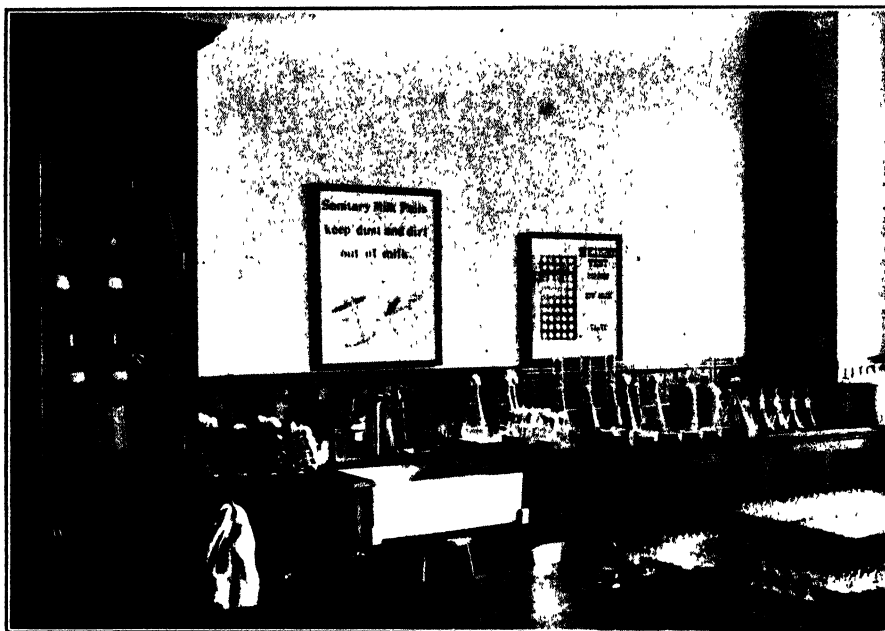
Advice and assistance is continually being sought by mail by dairymen and creamerymen on various problems of a bacteriological nature which crop up from time to time. These range from such simple enquiries as to why the milk turns sour to more complicated questions such

as treatment recommended for a tuberculous herd, or a suitable method for manufacturing butter of good flavour and keeping quality from cream both sour and old.

Samples and specimens of various kinds are received at the laboratory for bacteriological examination throughout the year. Among these may be mentioned water samples from creamery wells where there is suspicion of contamination and doubt as to the purity of the supply.

tors have been employed to visit the creameries and give assistance to the buttermakers in the latest methods of manufacture; to get in touch with as many cream producers as possible with a view to inducing them to produce a richer, sweeter and more uniform cream.

A few years ago the instructors were given some power as sanitary inspectors. This has very materially strengthened their work, which may be summarized as follows:—



VIEW OF SMALL BACTERIOLOGICAL LABORATORY DEVOTED TO DAIRY WORK

Pure cultures of lactic acid germs used for ripening cream are supplied to buttermakers at a nominal charge.

Considerable material of a bacteriological nature is collected and prepared for public demonstration and exhibition purposes. Much of this is of educational value to dairymen and creamery patrons and results in a better understanding of the principles underlying the sanitary problems connected with the production of milk and cream on the farm.

For some years creamery instruc-

1. Visits are made to the creameries every month or six weeks from April to November. Wherever the creamery owner will co-operate the instructors go out on the cream wagons, thus getting in touch with the cream producers.

2. A report (copy of which is left at the creamery) of each visit to the creamery and to the farms is made to the chief instructor, indicating the condition of the cream, the butter and the creamery. From these reports and by keeping in touch with the trade, a knowledge is gained of the quality of the butter that is being turned out. Efforts to improve quality may therefore be concentrated in individual cases.

3. Illustrated circulars dealing with the best

methods of producing cream, the patron's responsibility in producing fine butter, the improving and building up the dairy herds, etc., are at the beginning of each season mailed to all creamery owners to be distributed among their patrons. Detailed specifications for building insulated cream cooling tanks for use on the farm are also included in these pamphlets.

4. The instructors are furnished with salt and moisture tests with a view to securing more uniform salting and better texture in the butter. Instruction in cream testing is given where necessary and the use of metric scales for weighing cream samples for testing is encouraged.

Pasteurization of the cream, where practical, is advocated and instruction is given in the preparation and carrying on of pure cultures.

7. Experiments dealing with problems such as "methods of cream cooling," "Pasteurization," and "cream grading" are conducted from time to time at different creameries.

8. Before new creameries begin to operate they are expected to conform to reasonable sanitary conditions. All buttermakers must hold certificates of qualification and every creamery and cream buying station must be registered.



DAIRY SHORT COURSE STUDENTS IN BACTERIOLOGICAL LABORATORY

The latest creamery experiments are discussed with the buttermakers and patrons. Losses occurring through improper methods are, so far as possible, checked up and suggestions for improvement offered.

5. Inspection of the plant is made at each visit and whenever unsanitary conditions exist or defects in equipment are apparent these matters are brought to the attention of the creamery owners with the recommendations that conditions be remedied.

6. Information regarding the disposal of creamery sewage, the building and improvement of creamery storages, creamery accounting and many minor details is given. Plans for septic tanks, etc., are furnished.

9. Models of farm cream cooling equipment, creamery sewage disposal systems, etc., are shown at the larger fall fairs and information regarding the production, care, and testing of cream is given by those in charge and through printed circulars.

10. Each year at the close of the season a special "get together" creamery meeting is held when creamery men, patrons, buyers and instructors are invited to meet for the purpose of discussing the many important creamery problems.

11. The programs of the annual conventions of the Dairymen's associations devote considerable time to addresses and discussion on creamery work. Prizes are offered

for highest scoring butter at the winter dairy exhibitions held in conjunction with the conventions.

12. As many as possible of the annual creamery meetings are attended by their instructors and addresses given on creamery work.

No person who does not hold a

give assistance by careful constructive legislation.

An official of the Department is now investigating methods of grading and marketing butter in the hope that a system suitable to Ontario conditions and needs may be evolved.



STUDENTS PRINTING AND WRAPPING BUTTER

certificate of qualification shall act or be allowed to act as chief maker in any creamery or cheese factory in Ontario.

We look to a future broad gauged policy of quality payment not only for the cream but for the butter as well. It may perhaps be necessary to

With the hearty co-operation of the producers, creamery-men, dealers, and everyone interested in the trade we look confidently to a gradual improvement in conditions surrounding the production and marketing of creamery butter in Ontario.

MANITOBA

BY J. W. MITCHELL, DAIRY COMMISSIONER

THE success of factory or co-operative dairying in Manitoba and the other Prairie

Provinces is, in the main, measured by the success of the creameries. The reasons for this are obvious. The

cream-gathering creamery form of co-operative dairying is the only form that is at all generally applicable to our conditions since they are such that a factory must draw its support from a fairly large constituency, one altogether too great for the dairy delivery of milk.

The cream-gathering creamery system presents problems almost, or even quite, peculiarly its own, and it calls for the taking of fairly heroic steps to successfully cope with them; yet the means we have adopted, and would recommend after giving them

the work at a creamery than it is to get all the hundred or more patrons to supply good cream, it will be readily seen that the big problem is how to secure *not a portion but all* of the cream supply of good quality.

The means adopted for the improvement of the quality of our creamery butter may be classified under two general heads:—

1. Usual educational methods.
2. Grading of the cream and butter.

USUAL EDUCATIONAL METHODS

For a number of years we have



GRADING CREAM AT A MANITOBA CREAMERY

a fair trial, will, we believe, appeal to those interested as eminently fair.

We must bear in mind that under this system the patron becomes an exceptionally large factor in determining the quality of the butter manufactured, since he not only produces the milk but also creams it and cares for the cream for two or three days, or even a longer period, before it is sent to the creamery. If the flavour of any portion of the cream received be defective, that of the butter will suffer proportionately. As it is much easier to set matters right in

carried on educational work in the way of holding meetings, issuing timely bulletins and circulars, making use of the press, and furnishing inspectors and instructors to visit the creameries regularly and continuously, and to render assistance in every way possible to the management, the butter-maker and the patrons. These means we shall continue to make as full use of as possible, as they are, one and all, indispensable to the advancement of the work. However, we have found them not sufficient in themselves and

have adopted other means as complementary to them.

GRADING OF CREAM AND BUTTER

In connection with our work we have made a new application of an old principle and this has worked out most satisfactorily. It has long been the practice to grade live stock, wheat and other articles of commerce and to pay for them on the basis of quality. There is quite as much difference in value between first and second grade cream as there is between first and second grade wheat, and, consequently, just as much

"During the early part of the season we found the proportions of cream coming under second grade to be about 10 per cent of the cream received, but the percentage decreased steadily throughout the season. It is beyond question that, when proper judgment is used in grading, the results are most beneficial."

"Previous to last season it was almost a rare thing to get in a can of sweet cream from an ordinary shipper, while after grading as we did during the past two seasons, we have been able to get fully 40 per cent of our receipts sweet."

However, it took considerable time and patience to get the grading system adopted generally throughout the province.



GRADING CREAMERY BUTTER

reason for paying for the one as for the other on the basis of quality. This is the principle underlying our present grading system and it is meeting with general favour.

As far back as 1910 and 1911 we induced some of our larger creameries to grade the cream and make a difference of two cents per pound of fat between first and second grade cream. After a trial of the system they reported to us and we quote extracts, as follows, from letters received from two different creamery managers:—

In February, 1914, a convention of creamery men, representing practically all the creameries of the province, was held at the Manitoba Agricultural College, and at this meeting two important resolutions, strongly favouring the introduction of the grading system for both cream and butter, were passed unanimously.

The first reads as follows:—

"Resolved, that the creameries of the province should institute a uniform system of grading cream, and that payment to patrons should be made on the basis of the same."

The following as a basis for the grading of cream was subsequently approved by resolution:—

*"First Grade Cream:—*Preferably sweet, from which first-class butter can be made by a competent buttermaker. The flavour to be clean and fresh, and the consistency smooth and even.

*"Second Grade Cream:—*Sour or sweet, which is slightly stale, old or bitter, or otherwise slightly defective in flavour, but of a smooth, even consistency.

"Cream which will make an inferior quality of butter should be rejected.

"A difference of two cents per pound of butter fat, between the prices paid for the two grades of cream, should be made."

duction of the grading system were most marked, and its continuation will mean a steady improvement in the quality of our creamery butter, from year to year, and the placing of the creamery business on an ever higher plane. There is little doubt but that the improvement in the quality of our creamery butter, due to the introduction of the grading system, coupled with thorough instruction work amongst the creameries, prevented a slump in prices during the season of 1914.

A considerable quantity of Manitoba creamery butter was stored last



FINISHING A PACKAGE OF CREAMERY BUTTER

The following is the second of the two resolutions referred to:—

"Resolved that the Government be most respectfully and urgently requested to make arrangements for the grading of our creamery butter and furnish the necessary facilities, including cold storage, for carrying out the same."

In principle, the two resolutions became effective at the beginning of the season of 1914, the government, on its part, increasing the instruction work amongst the creameries and appointing a dairy produce grader.

The beneficial effects of the intro-

season by the Winnipeg produce merchants for their fall and winter trade, and it turned out very satisfactory, and as a result there is no hesitancy about storing butter this year.

We have found the grading system of great assistance to the instructors in their work. In fact, the grading and instruction work become one—that is, there is a continuity in the work from the production and care of the cream by the patrons through the work done at the creamery, and on to the marketing of the butter.

SASKATCHEWAN

BY W. A. WILSON, DAIRY COMMISSIONER

TO explain fully what has been done to improve the quality of creamery butter made in Saskatchewan it is necessary to first give a brief review of the business end. Commenting on Saskatchewan's development in dairying one of the leading Montreal papers said,—"It is safe to say that Saskatchewan's career as a dairy province, although a matter of but the past few years, has eclipsed in its phenomenal success the brightest record of every other province in the Dominion." While laying no claims to such an enviable position it is nevertheless true that all conditions considered and in a comparatively short time Saskatchewan has made rapid and permanent progress both in the matter of volume of business and quality of butter manufactured in its creameries. When the dairy branch was established in 1907 two main features in agricultural work retarded the development of dairying:

1. Profitable wheat yields.
2. Unprofitable returns from dairying.

The educational side we believed was inseparable from the commercial so we set about to establish and perfect the latter which course has already worked out to splendid advantage in improving the quality of the butter.

Our early efforts were first concerned with the designing of some policy that would overcome the second condition mentioned above and this was made possible by the businesslike attitude of the Saskatchewan government in giving the industry the attention and consideration it deserved early in its development in preference to permitting the interests to lie dormant until public sentiment necessitated action. The creamery work was the first co-operative undertaking in the province, and it commenced at a time

when there was practically no interest manifested. Two outstanding features of the government's policy will explain the present stability:

1. Discouraging premature organization.
2. Judicious centralization.

Premature organisation usually ends in failure and retards development because of the difficulty in overcoming the influence arising out of an insolvent business. Saskatchewan has had its experience and ten years ago there were quite a number of creamery companies operating which are not known today. There is no one feature that develops the industry more than satisfactory returns to the producer and conversely the opposite obtains. It has been, therefore, the aim of the government thus far to establish creameries only in districts where there was a fair prospect of success, and since the inauguration of the policy in 1906 there has been a large increase in the quality of butter and not one insolvent co-operative creamery company. Confidence has now been established and the work is supported by all who are familiar with the plan of operation. It has an indisputable economic advantage wherein the capital expenditure is reduced to a minimum, and favourable conditions created for a large volume of business under efficient management, thus making possible a reduction in the operating cost and a correspondingly high return to the producer. By actual results it has been demonstrated that former difficulties and objections can be overcome by the adoption of a businesslike policy suitable to the conditions.

Judicious centralization of the creamery work is equally important. Why incur an expenditure of \$12,000 in erecting two creameries when \$6,000 for one would serve the same number of farmers and be capable

of handling all the cream offered in both districts? This and all similar economic questions have been carefully determined, looking towards a strong permanent businesslike commercial organization, the influence of which would subsequently lend itself to a forceful educational campaign to bring the quality of the butter to an equally high standard.

Although the foregoing review may at first appear quite aside from dairy education we take the opposite view and believe that good business organization lends itself to education, in fact is education. The management of a struggling business has really no voice in bringing about modern methods associated with production, but supported by prosperity and creditable results it can guide or even control any system that lends itself to improvement. While building up an efficient business system we did not overlook any opportunity of improving the quality of the goods manufactured, but marked results were not attained until the grading of cream and payment on the basis of quality was introduced. The volume of business having been established, the educational work was a natural outcome, and there remained little to fear from this advanced step, because competition and indiscriminate bidding for business were not likely to have any serious effect.

GRADING CREAM

To prevent misunderstanding and to make success more certain the actual introduction of the plan was preceded by a season's programme among the farmers. In 1911 two dairy instructors were appointed and one of their duties was to discuss the change of payment and to explain the justice of grading cream and paying for same on the basis of flavour. It meant offering a reward in dollars and cents for the best cream and a relative return for any cream not coming up to the highest standard. They solicited objections, they out-

lined its advantages, they dwelt upon its effect with the trade as well as on the individual producers in giving them a monetary return based on merit of service in caring for the cream and advised that the following year it would likely be introduced at all creameries. Subsequently a plan was outlined and the notices for each annual creamery meeting contained an announcement of the policy and invited attendance to discuss and criticise. The writer attended all meetings and at each one a resolution was passed approving the change. Later it was taken to the dairymen's convention and there finally passed upon unanimously. The classification of cream is just in principle and this should remove objections. Besides it brings results in quality that cannot be obtained through any other means. In May, 1912, the co-operative creameries commenced grading cream and paying the farmers on the basis of the quality as determined by the flavour. At first two grades were fixed with a difference in price of 2c. per pound of butter fat as follows:

First Grade:—Cream must be clean and fresh flavoured, preferably sweet, showing no sediment and free from lumps and curdy matter.

To qualify for this grade cream testing 35 per cent or over and delivered at the creamery at least twice a week is recommended.

Second Grade:—Sour or sweet cream, slightly off or strong in flavour, but of a smooth and even consistency.

Third Grade:—Cream that does not qualify for grades one or two. This cream will be rejected.

After two years' operations an "Extra No 1" grade was added. This was deemed advisable because many farmers were sending cream better in quality than the highest standard at first fixed. As their reward and encouragement the new grade was adopted and a higher price offered. They now stand as shown herewith:

Extra No. 1:—Perfectly sweet and fit for domestic trade.

No. 1:—Cream must be clean and fresh flavoured showing no sediment and free of lumps and curdy matter.

No. 2:—Sour or sweet cream, slightly off or strong in flavour, but of a smooth and even consistency.

No. 3:—Cream that does not qualify for grade two.

The advance price on Extra No. 1 is 3 cents a pound of butter fat above No. 1, and 5 cents above No. 2, while No. 1 is 2 cents higher than No. 2.

The flavour and keeping properties of butter determine its market values and this in turn is regulated by the flavour of the cream delivered by the individual producer. Thus by allowing compensation to the producer for the extra work involved in supplying the best grade of cream the educational propaganda operates with every cream cheque mailed to the farmer. In no instance that I know of has a farmer supplying "Extra No. 1" cream withdrawn his patronage, while on the other hand farmers supplying "No. 2" have withdrawn their support, and although the volume of business was lessened to that extent the quality

of the butter because of the absence of much of the No. 2 cream showed an improvement. Their withdrawal in most cases was only temporary since the price paid for the better flavoured cream proved a powerful magnet, and those who yielded to its influence have demonstrated that where dollars and cents are the reward for labour the possibility of the production of sweet flavoured, clean cream is seldom questioned. This practice is the fore-runner of profitable markets which everyone knows means profitable returns to the dairy farmer.

GRADING BUTTER

To carry out and complete the programme of justice as exemplified in grading cream the grading of butter was adopted in 1914 by the co-operative creameries, and for each churning at every creamery an official grade certificate is issued, copy of which is given herewith:

PROVINCE OF SASKATCHEWAN
Department of Agriculture, Regina
DAIRY BRANCH

No.

Date of Grading

GRADE CERTIFICATE FOR CREAMERY BUTTER

I hereby certify that I have this day graded boxes of butter from Creamery as follows:

- (Letter)
- Packages 1st Grade Creamery.
- Packages 2nd Grade Creamery.
- Packages 3rd Grade Creamery.

Perfect Score 100	1st Grade 92 to 100 Points	2nd Grade 84 and under 92 Points	3rd Grade under 84 Points	WEIGHTS		
				As Marked on Boxes Lb.	As Checked Lb.	Oz.
Flavour. 45						
Body, moisture and texture. 25						
Colour. 15						
Salting 10						
Finish. 5						
Total points al- lotted. 100						

Churning No . .	1st Grade	2nd Grade	3rd Grade
Churning date . .			

Remarks:

Government Grader.

Note that the certificate shows the creamery letter, churning date, grading date, the churning number and the number of boxes packed from that particular churning. Saskatchewan is the only province in the Dominion at the present time that issues an official certificate, and when butter is sold the certificate covering the various churnings is forwarded to the consignee. The score represents the quality of the butter in the judgment of the official grader, and the certificate enables the buyer to sort out easily any special quality or churning and also to verify the government grader's judgment concerning the quality. It also enables the buyer to verify the date of the

churning of butter, consequently if he buys June butter it is not easy to substitute the make of some other month. Experience has amply justified the introduction of butter grading and particularly the issuing of official certificates. Competition in the western trade has become keen and the trade is selecting carefully its butter purchases. In the summer of 1914 thirty-two cars of butter were marketed through the Dairy Branch, Department of Agriculture, Regina, and shipped to outside points, principally the Pacific coast, while at the time of writing indications are that 1915 will show a very considerable increase.

ALBERTA

BY C. MARKER, DAIRY COMMISSIONER

OF all the educational efforts that have been advanced for the improvement and standardization of the quality of our creamery butter the pay-according-to-quality principle has undoubtedly proved the most effective.

This principle is eminently fair. It operates swiftly, and convincingly. It gives point to, and makes available much of the information which has been so generously disseminated through the press and from the platform. It stimulates the desire for more knowledge and places a premium on skilled labour.

In order to trace briefly the development of the pay-for-quality principle in the creamery industry of this province it may be pertinent to state here that six years ago the Department of Agriculture decided to start a campaign of educational work among the patrons of the government creameries, and from a purely marketing point of view. The western markets for dairy produce were then developing rapidly along quality lines and high grade

products were in good demand at remunerative prices.

The object of the campaign was to help put the creameries in a position to cater to the most discriminating markets and to place the business upon a quality basis so far as the individual patrons were concerned. In other words, it was proposed to grade the cream and distribute the net proceeds realized from the sale of the butter not only on a "per pound of butter fat" basis but also according to the quality and relative market value of the butter that could be manufactured from the cream furnished by each person.

Somewhat extensive preliminary trials were made at the creameries in the latter part of the summer of 1909 to demonstrate that the grading of the cream as supplied by each patron was entirely feasible under existing conditions and that it could be fairly done. It was interesting to note that as soon as it became generally known that the creameries were "grading" and keeping a record of the results, there was an immediate

and marked improvement in the quality of the cream furnished by a good many of the patrons who had up to that time exhibited every symptom of carelessness or indifference in the handling of their cream. The educational value of the work became evident at the very start.

The results secured from the local preliminary trials, and the proposed new plan for the payment for cream, were placed before the provincial convention of creamery delegates and afterwards, at the annual general meetings, submitted to the board of directors and patrons of each creamery for consideration.

In every case the Department's proposal met with a practically unanimous approval and at the beginning of the season of 1901 the government creameries undertook to grade all the cream supplied by the individual patrons and to pay a premium of 2 cents for each pound of butter fat contained in First Grade Cream.*

In the same year Mr. P. Pallesen, who had been associated with the provincial dairy service for a number of years, established the Calgary Central Creamery and started his butter making business upon a cream grading basis. His butter output has increased by leaps and bounds and will this year exceed a million pounds. Mr. Pallesen is a strong advocate of grading in the creamery business.

The cream grading principle has now been adopted by practically all the creameries in the province. Each operator sets his own grade standards

and price differentials to correspond with the requirements of his market.

According to complete returns at the close of last season from thirty-two creameries, eighteen worked on two grades, twelve on three grades, and two on four grades.

The price difference in cents per pound of butter fat in each grade of cream is shown in the following table, viz.:

TWO GRADES					
3	creameries	made	a	difference	of 2c.
1	"	"	"	"	2-3c.
4	"	"	"	"	3c.
5	"	"	"	"	4c.
5	"	"	"	"	5c.

THREE GRADES					
4	"	"	"	"	2c.
1	"	"	"	"	2-3c.
1	"	"	"	"	2-4c.
1	"	"	"	"	1-4c.
1	"	"	"	"	2-5c.
1	"	"	"	"	3-4c.
1	"	"	"	"	3-5c.
1	"	"	"	"	4-6c.
1	"	"	"	"	6c.

FOUR GRADES					
1	"	"	"	"	2-2½c.
1	"	"	"	"	2-4c.

When the grading of "churning cream" was taken up in 1910 at the creameries operated by the department two grades only were recognized. A premium of 2 cents was paid per pound of butter fat in all first grade cream. Since then the development has been in the direction of closer grading, in sympathy with the movements of the butter market, and a greater spread in the prices paid for butter fat in the outside grades.

Although the local management of the government creameries was transferred in the spring of 1911 to the associations that owned them, the butter marketing service was continued by the department and has since been available to any creamery operator in the province. In all cases the butter is being sold, and the proceeds distributed among the creameries, upon the basis of certain well defined grades. The creameries, in turn, accept cream

*It was the writer's privilege to present a paper on "Grading and Quality Basis Payment of Cream at Creameries" at the Third Dominion Conference of Dairy Experts held at Ottawa in December 1911. This paper, included in the printed report of the conference issued by the Dairy and Cold Storage Commissioner, describes at some length the conditions and considerations which led up to the adoption of the cream and butter grading campaign in Alberta and the procedure that was followed.

from their patrons on grade and pay them accordingly.

GRADING STATIONS

The grading of the butter that has been marketed by the department has been done at Calgary in connection with the cold storage work. In order to assist creamery operators and salesmen to do their own marketing on a uniform basis, an additional grading station was established at Edmonton at the beginning.

The butter grading service is defined in the following (1) Form of Agreement and (2) notes re grading of creamery butter and definition of grade standards.

MEMORANDUM OF AGREEMENT BETWEEN

The Dairy Commissioner, acting for the Department of Agriculture for the Province of Alberta, and

1. The Dairy Commissioner agrees for the period of one year from April 1, 1915, to score and classify according to its marketable quality each shipment of representative samples of creamery butter received by him from

for that purpose, at the Government Grading Station at Edmonton or at Calgary, to mail as soon as possible thereafter to
or to written
order, score cards and grade certificates covering such samples, and to pay on each shipment of butter so received and graded, a price which in his judgment represents its relative market value after deducting:—

(1) The cost of transportation, if any, paid by him on such butter at the grading stations at Calgary or at Edmonton, Alberta.

(2) The cost of packages and other supplies, if any, furnished by him to the said.

2. The Dairy Commissioner agrees to hold for at least four weeks the sample packages of butter for which grade certificates have been issued, in order to facilitate the settlement of possible disputes between the buyer and the seller as to grade of the butter which these sample packages are reported to represent.

3. In consideration of the foregoing agrees to use a separate, serial number for each churning of butter that is to be scored and classified by the Dairy Commissioner throughout the period covered by this agreement.

4. agrees to accept and to carry into effect such directions as the Dairy Commissioner may give from time to time respecting details of the packing, the marking and the shipping of the butter to be scored and graded by him and of the records to be made and forwarded in that connection.

5. It is mutually understood by the parties hereto that in all cases the score cards and grade certificates issued by the Dairy Commissioner under this agreement shall relate only to the packages of butter actually scored and graded and as at the time of scoring and grading.

Dated at this
day of 191 .

Witness:

Witness: Dairy Commissioner.

NOTES RE GRADING OF CREAMERY BUTTER

The attached form for agreement covers the grading of representative samples of creamery butter, a service which the Department offers to all creamery operators in Alberta who market their butter output themselves but who find it impracticable to send the complete churnings to the grading station for grading and marking prior to shipment. The expression "representative sample" means here a 14 pound box (solid pack) from any churning of butter.

Sec. 1. Under this arrangement the Department's scores and grade certificates must necessarily be based upon the quality and condition of the representative samples of butter shipped to and examined at the government grading station. Yet, in the main, the score and classification of each sample should apply at the same time to all packages of butter put up from the same churning and, therefore, bearing the same brand and churning number. We wish to emphasize here that inferior workmanship in the packing of butter is often responsible for lowering its grade, commercially. Hence, equal care should be given in putting up and finishing each package from every churning.

We recommend the creameries to keep a small sample of butter from each churning for comparison with score and grade returns from the grading station and from the trade. Such samples should, of course, be kept in a cool place and in close containers bearing their individual churning numbers, for the purpose of identification.

Sec. 2. While assuming no liability whatsoever in any matter of dispute that may arise as between the buyer and the

original seller of any creamery butter for which grade certificates have been issued on sample, the Department will forward to any given address, on the written requisition of the seller and at his expense, a copy of the grade certificate covering it. The requisition must be made within the time specified in Section 2 of the Agreement and give the brand and churning numbers of the samples required.

Sec. 3 We recommend the creameries to keep in a permanent form a dairy record of each churning. This record is to show (1) the serial churning number and (2) the number and description of the packages put up. The same churning number should be plainly stamped on all boxes put up from the same churning and as soon as they are packed. The utility of the grading service as outlined herein and its continuance will in each case depend upon this rule being conscientiously followed.

Sec. 4. Full shipping directions and report forms will be furnished by the Dairy Commissioner's office, Calgary, upon the completion of the agreement.

Sec. 5. As poor storage facilities at a creamery may cause marked deterioration in the quality and commercial value of butter held there, even for a short time, it is desirable that whenever shipments are forwarded to buyers, subject to grade cer-

tificates, the representative samples should be shipped to the grading station at the same time.

The following grade standards will be used by the department until further notice:

Special Grade, 94 to 100 points, minimum for flavour 41 points.

First Grade, 91 and under 94 points, minimum for flavour 39 points.

Second Grade, 87 and under 91 points, minimum for flavour 37 points.

Off Grade, under 87 points.

REQUIREMENTS FOR "SPECIAL" GRADE

Flavour: Score 41 points and up to 45; fine, sweet, fresh and clean.

Texture: Firm and fine; clear, but not excessive, free moisture.

Colour: Uniform and correct shade, as required by market.

Salting: Not too heavy, well dissolved, thoroughly mixed.

Package: Clean, securely joined together; neatly branded; evenly coated with paraffin wax on the inside surface; good quality of parchment paper lining and print wrappers (when the latter are used) neatly arranged; packages of size and dimensions required by buyer, solidly filled, full weight; bright, smooth surface.

GRADE CERTIFICATE FOR CREAMERY BUTTER

I have this day graded, as under, marked and placed in cold storage, One sample package of butter received from and branded

	Max Score	GRADE				Remarks:—
		Special 94-100 Points	First 91-94 Points	Second 87-91 Points	Off under 87 Points	
Flavour	45					
Texture	25					
Salting	10					
Colour	10					
Package	10					
	100					
Points given						Dairy Produce Grader.

BUTTER SCORE CARD

	Marks on Packages—Letter								Details and Reference Numbers											
	1	2	3	4	5	6	7	8	Of Defects				To Score							
													1	2	3	4	5	6	7	8
Flavour (45)									Flat	1										
									Heated	2										
									Weedy	3										
									Sour	4										
									Bitter	5										
									Stale	6										
									Metallic	7										
Texture (25)									Salvey	8										
									Brittle	9										
									Weak	10										
									Milky Brine	11										
Salting (10)									Too Light	12										
									Too Heavy	13										
									Undissolved	14										
Colour (10)									Too Light	15										
									Too Heavy	16										
									Mottled	17										
									Uneven	18										
									White Specks	19										
Package (10)									Poorly Packed	20										
									Poorly Printed	21										
									Poorly Wrapped	22										
									Poorly Nailed	23										
									Dirty	24										
									Poor Finish	25										
Total (100)									General Remarks:											
Date:																				
By:																				
Check Weight																				

The creamery operators of the province and wholesale buyers of butter are taking full advantage of the department's butter grading service. At this time more than 250,000 pounds of creamery butter is being scored and graded weekly at the grading stations at Edmonton and Calgary, partly under the terms of the special agreement already referred to and partly under agreement covering the marketing of creamery butter by the department. Score cards and grade certificates, of the forms annexed and covering each lot scored, are delivered to the shippers of the butter.

In adopting and applying the pay-for-quality principle the trade and the creamery operators are rendering valuable service in the building up of an efficient marketing organization from the producer to the consumer. They are helping, directly, to establish higher standards in the quality and value of the milk and cream produced for sale and, indirectly, a keener appreciation of the quality idea in the production of other commodities upon thousands of farms throughout the province.

PLOUGHING MATCHES

Towards the beginning of June, the Editor of THE AGRICULTURAL GAZETTE, recognizing the value of ploughing matches in making for good ploughing, addressed a letter to the Deputy Ministers of Agriculture of all the provinces asking them to furnish answers to the following questions:—

- (1) Under what organization are your ploughing matches conducted?
- (2) The part played by your department?
- (3) What modifications in classification, rules, etc., have been made in recent years to meet the changing methods of cultivation and types of implements used?
- (4) What provision do you make for covering the different parts of the country, and what arrangements do you make with the farmers on whose farms the matches are held?

Following are the replies received:—

NOVA SCOTIA

BY F. L. FULLER, SUPERINTENDENT AGRICULTURAL SOCIETIES

THE only ploughing matches held within my recollection, in the province of Nova Scotia, are a few which were held in the "eighties." These matches were locally arranged, and the amount of prize money (which was small), was made up from donations and entrance fees. From that time until three years ago, I feel satisfied that there has not been a ploughing match in the province. In 1912, the federal and provincial members of parliament for Pictou county contributed \$50, to be given at two ploughing matches to be held in that county, and appealed to the Department of Agriculture for assistance in making prize lists and judging. At that time, I wrote to different sections of Ontario and Quebec and secured copies of posters advertising ploughing matches. As we were starting in here, we simply made two sections for walking ploughs, one for boys under twenty-one years of age, and the other for men twenty-one years or over. In addition to prizes given for the best ploughed ridge, special prizes, donated by firms and private individuals, were given for:

- (a) Best crown.
- (b) " finish.
- (c) " in and out.
- (d) " team on grounds.
- (e) " equipment on grounds.

The two years which have followed have seen a largely increased interest in ploughing matches in Pictou county, and while the Department of Agriculture has no policy regarding ploughing matches, it has assisted to some extent. We think that the initiative in such cases should be taken by the people themselves. Wherever this is done, the Department is willing to give a hand.

The great lack of interest in ploughing is attributed to the fact that, with the use of modern machinery, the only thing necessary seemed to be to turn the land upside down. It is very probable that this fact did not apply to the same extent in Nova Scotia as in some other provinces, and that, therefore, ploughing in the province of Nova Scotia did not deteriorate in the same proportion that it did elsewhere. This is probably owing to the fact that we have large tracts of dyked marsh-land

scattered all over the province, and anyone who has had any experience with this kind of land knows that it takes a good ploughman to handle it in any shape, and, if the best results are to be obtained, a skilled workman is required. Furthermore, the use of modern machinery does not apply to the same extent on this kind of soil as it does on ordinary

upland. For this reason, as before stated, we think that ploughing has not deteriorated in the province of Nova Scotia to the same extent that it has elsewhere; at the same time, the Department is in favour of ploughing matches and is prepared to give assistance toward organizing them.

QUEBEC

FALL ploughing matches under the Agricultural associations and Farmers' clubs are strongly encouraged by the Quebec Department of Agriculture, which allows these associations to use the Government subventions for organizing such matches. Similar competitions are also held by other organizations, which receive a special grant to this effect from the Government.

REGULATIONS

The most important items in the regulations are that the ploughmen must not be followed by another person and that they must not be allowed to go over their work and improve it. There are classes for adults and young men less than twenty-one years of age. Ploughs used may be single or double.

It is required by some associations that the competitors have at least five acres of ploughing for inspection, other associations appoint a date for the contest. In the latter case, competitors must plough five or six hours. Judges do not start their in-

spection until after the competitors have finished ploughing. The following score card is used by the judges:—

	Possible	Points Granted
1. Ridge.....	10	
2. Number of furrows .	5	
3. Last furrow	10	
4. Depth of ploughing.	5	
5. Turning over of the furrows	10	
6. Clean cutting	5	
7. Compactness	15	
8. Straightness of land.	5	
9. Level of land.....	10	
10. Regularity.....	5	
11. Width of dead fur- row.....	5	
12. General appearance	15	
Total.....	100	

The judges also consider the drainage system in the competitors' fields.

Ploughing contests are arranged for every year by a number of agricultural societies, farmers' clubs, and other associations, and the judges are pleased to note that there is an improvement year by year, and that their suggestions are adopted by the farmers.

ONTARIO

BY J. LOCKIE WILSON, SUPERINTENDENT AGRICULTURAL SOCIETIES

FORTY years ago large and substantial grants were given for ploughing matches by both the Federal and Ontario Govern-

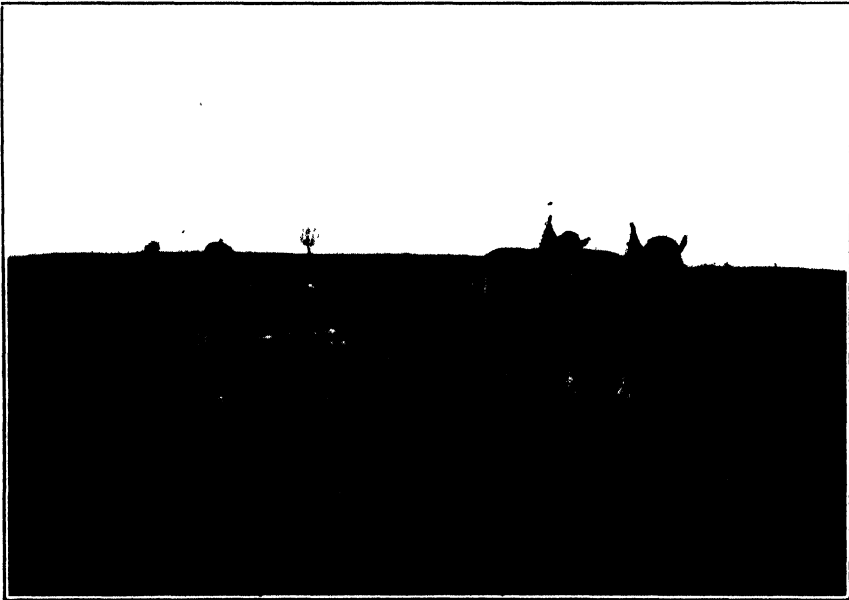
ments, and, under the Agricultural and Arts Association, grants were given to agricultural societies which held ploughing matches. Under the

present Act it is permissible for such associations to award premiums for matches, but for a number of years advantage has not been taken of this, and not until 1911 were any definite steps taken to revive interest in these splendid educational competitions that did so much good in the past to encourage clean farming and proper cultivation of the soil. As a result of this neglect, many districts in Ontario became overrun with noxious weeds, and farmers began to realize that something should be done to improve

payable in advance, and a single payment of ten dollars constitutes a life member.

BRANCH ASSOCIATIONS

Provision is made for the establishment of branch associations. The Central Association sets aside fifty per cent of the Government grant for apportionment equally among the branches; the remainder of the funds at the disposal of the association is apportioned two-thirds on membership and one-third on



AT A YORK COUNTY PLOUGHING MATCH

conditions in this regard. A large and enthusiastic meeting of agriculturists was called by the writer, which met in Toronto in January, 1911, and the Ontario Ploughmen's Association was organized. A small grant was made by the Ontario Legislature and a constitution adopted, setting forth among other things that the object was the encouragement of annual provincial, county and township ploughing matches.

Any person may become a member by payment of one dollar per annum.

actual cash expended for prizes. No grant is paid to any branch association unless a return has been made to the secretary of the central association within five days of the holding of the match, accompanied by a statement sworn to before a Justice of the Peace, Commissioner or Notary Public, as to membership for the current year and cash prizes paid at the match. The annual meetings of the branch associations are held between the 15th and 21st of January in each year. A branch association

must have not less than twenty members and may appoint one delegate, whose railway fare when attending the annual meeting of the Central Association is paid by the Central Association, or one delegate may be appointed for every twenty members of the branch, on condition that the Central Association shall pay the expenses of only one delegate for the branch while attending the annual meeting. Directors outside a radius of 25 miles of the Central office are also paid their railway fare by the Central Association when attending

the branch associations are required to send to the secretary of the Central Association within one week after the annual meeting, a report giving the names of the officers and directors of their branches, together with their post office addresses.

THE PROVINCIAL MATCH

Since the date of inauguration three provincial ploughing matches have been held, an average of 2000 people being in attendance each year. Eighty ploughmen entered the competition at the provincial match last



TURNING A PRIZE-WINNING FURROW

board meetings. The annual convention of the Central Association is open to all members of the branch associations, and such members have the right to take part in the discussion of questions coming before the said central convention, but only the accredited delegates from the branch associations, together with the officers of the Central Association, have power to vote at such annual or special meetings. The secretaries of

year, at which valuable prizes were offered. Only the prize winners in each class of the branch associations are allowed to compete in the provincial match. The rules and regulations for the provincial match are as follows:—

1. Entry fee \$1.00 (boys' classes free).
2. Time per acre in sod, 20 hours; in stubble, jointer ploughs, 12 hours.
3. Average depth of furrow, six inches.

4. After setting and removing stakes, no assistance will be allowed in classes 1, 2, 3. Class 1: In sod, open to all; class 2, open to those who have never won a first prize in this class prior to 1914; class 3, jointer ploughs in sod, no wheels or shoe.

5. Selection of land to be by ballot.

6. All ploughmen to be on the field at 8 o'clock a.m., ready to commence work at 9 o'clock sharp.

7. Commencement in stubble must be opened out clean, three inches deep. No attachments allowed on mould boards.

8. Specials for horses; horses and harness to be the property of one man, not necessary for owner to be ploughman.

9. No shaping of furrows by hand, stake or ploughspade, except scratches and first heavy round.

10. The Association will not be responsible for prizes not called for before January 1st, 1915.

11. The decision of the judges to be

final. No interference with the judges in the performance of their duties will be allowed.

Before any branch can receive a grant from the central organization an affidavit must be signed and sworn to by the officers of the local branch.

OFFICERS FOR THE YEAR

The following is a list of the officers of the Ontario Ploughmen's Association for 1915:

Honorary president, Major Jos. Kilgour, Eglinton; past president, James McLean, Richmond Hill; president, A. P. Pollard, Zion; 1st vice-president, Wm. Doherty, Eglinton; 2nd vice-president, L. W. Smith, Millbrook; secretary, J. Lockie Wilson, Toronto; treasurer, T. A. Paterson, Ellesmere.

MANITOBA

BY S. T. NEWTON, SUPERINTENDENT EXTENSION SERVICE, AGRICULTURAL COLLEGE

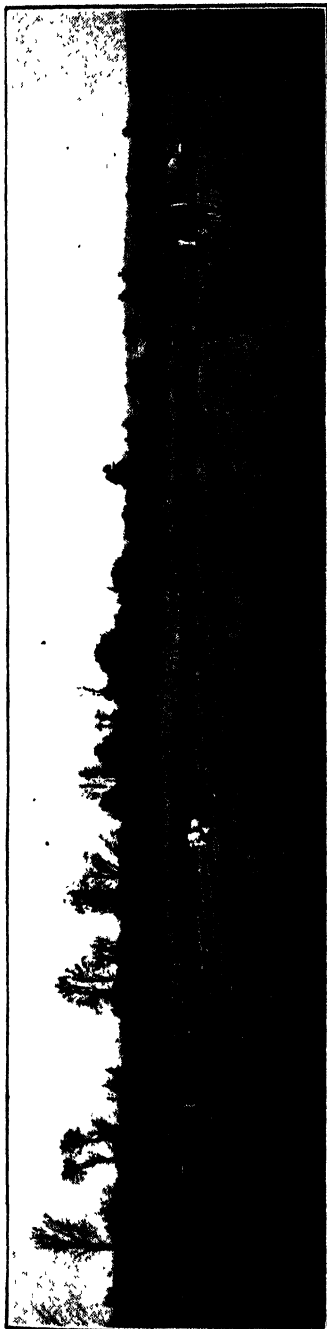
FROM the earliest days in Ontario, the ability to plough a straight furrow was an accomplishment to be proud of, and to Manitoba many of these ploughmen brought with them their prowess in this branch of agriculture, but there were many new comers who did not appreciate the relation which good ploughing bore to successful farming. Consequently the Government organized ploughing matches almost twenty years ago as a means of demonstrating both the methods of good ploughing, and its advantages in killing weeds and conserving moisture.

During the first few years the matches were held under the direction of the farmers' institutes, but these were few in number and the interest lagged. A few years ago the agricultural societies entered the field and since that time ploughing matches have been growing in favour and now almost one-third of the seventy societies hold annual ploughing matches during the month of June. The matches are not con-

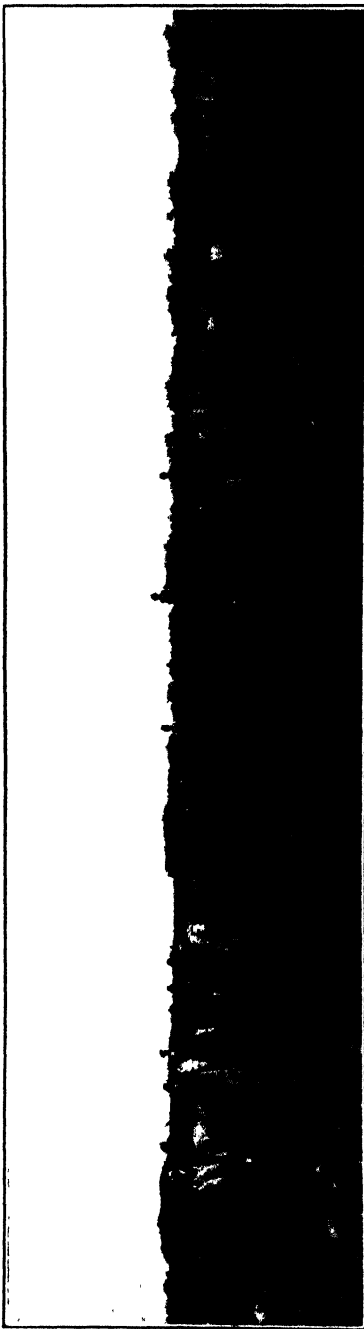
fined to these two organizations, and the Government does not hesitate to lend assistance to any organization of farmers that will comply with the rules governing ploughing matches.

Each organization is free to arrange for its own judges, but the Department of Agriculture, in order to save expense, has arranged that the different organizations may co-operate through the Extension Service Section of the Agricultural College, when the matches are arranged in circuits, so that judges can attend at a minimum of expense in time and railway fares, and, as a consequence, the judging is done by experts who have no interest other than a desire to give the very best service.

So marked has been the improvement in the quality of the ploughing where matches have been held that the Department of Agriculture is anxious to still further encourage matches being held. To this end a bulletin is being prepared by the Extension Service which will fully



ONTARIO PLOUGHMEN IN COMPETITION



LINE UP OF CONTESTANTS AT PLOUGHING MATCH, STRATHCLAIR, MANITOBA

explain how to organize and conduct ploughing matches, the points to be observed and the best methods to follow in doing successful work, the points emphasized by the judges in placing the awards with reasons for the same.

During the past winter the women have taken a deep interest in all features of extension work and have been present in large numbers at the matches, and, as a consequence, the Home Economics Societies are planning competitions for women which may be held at the same time. This year they served lunch at most of the matches and donated the proceeds to the Red Cross association.

The rapidly changing methods of farming have led to changes in the rules. The walking plough has almost ceased to exist and is only used in the garden, and as a result the competition in this class is getting so small that next year it will probably disappear from the prize list altogether. The number of competitors in the sulky and gang plough classes, and for the best fitted team and plough, is steadily increasing.

Each year greater attention is being paid to moisture conservation and weed eradication, with the result that the depth of the furrow has been gradually increased from 4 to 5½ or 6 inches, and the judges give a higher score when the land is turned over flat, thus forcing out the air, than when left on edge in the long straight furrows showing from end to end that used to delight the heart of the ploughman in Ontario.

Up to the present, matches have been fairly evenly distributed throughout the province, but there are many districts where matches could be held with considerable advantage, and next year an effort will be made by the district representatives to have matches organized in several new districts, and a provincial ploughing match arranged for, probably at Portage la Prairie where the most expert ploughmen from each district will meet for the purpose of comparing methods and incidentally deciding who has the honour of being the champion ploughman of the province.

SASKATCHEWAN

BY S. E. GREENWAY, DIRECTOR OF AGRICULTURAL EXTENSION, UNIVERSITY OF SASKATCHEWAN

THE conduct of ploughing matches in the province of Saskatchewan, of which there are being held this year between sixty and seventy, is entrusted locally to the agricultural societies, grain growers' associations, or, in some cases, an individual serving under the municipal council. The general supervision of the ploughing matches is in the hands of the Director of Agricultural Extension at the University of Saskatchewan. The Extension Department suggests rules and regulations under which the matches may be conducted and provides free of cost to the local organization skilled ploughmen to make the

awards on the day of the ploughing.

The rules and regulations which are provided are not necessarily to be followed in detail by the local organization putting on the competition, but are merely suggestions in order to assist the local organization to make the competition interesting and profitable, the privilege being extended to them of varying the regulations to meet the conditions in their particular localities.

There have been no modifications made in the classification to meet the changing methods of cultivation and types of implements used. Good ploughing is good ploughing whether

it be done by the old fashioned walking plough which some societies have discarded altogether, or the up-to-date sulky or gang plough or even the disc plough, conditions imposed being practically the same.

The ploughing matches are arranged in circuits by the Director of Agricultural Extension, and, in order to serve the interests of economy, only one skilled judge has been provided for each circuit and in certain cases additional speakers, if requested, and the communities where ploughing matches are held grouped in such a way as to be most readily accessible to the judge.

The ploughing match is usually held on the property of a farmer whose field is being summer fallowed, and is the result of a mutual arrangement between the owner of the property, who generally provides entertainment for the competitors, and the committee in charge. Quite frequently where the ploughing match is held by the agricultural societies or grain growers' associations the day is given up to the holiday spirit and a picnic held. The use of the field to be ploughed is a gratuitous arrangement between the owner of the property and the committee in charge, the compensation, on the one hand, being a well-ploughed field, and, on the other, a group of farmers who have benefited by what is becoming an excellent means of developing craftsmanship on the farm. The opportunity is eagerly seized by implement men to display and demonstrate their implements.

THE PURPOSE OF THE PLOUGHING MATCH

The object of the ploughing match is to encourage good ploughing on the part of the young men. Good ploughing is the fundamental operation in agriculture and the very basis of good farming. All really successful farmers are good ploughmen. The craftsmanship that is inseparable from good ploughing manifests itself

in every manual act of the farmer. It has been observed that the best ploughmen in the community are not only the best farmers but, generally speaking, the best and most influential citizens.

Good ploughing consists of:

(1) A correct strikeout which is secured by making the first furrow comparatively shallow and "hawing" around for the second furrow. This is to insure a clean operation. The ploughman then "gees" around, throwing back the second and strikeout furrows with a clean undercut in each case, and filling the dead furrow evenly. The plough is then gradually let down to the proper depth in the first three or four rounds. The result will be a uniform and ridgeless "crown or feering". Some careful ploughmen leave an unploughed strip about four inches in width between the strikeout and second furrow made by "hawing" around, which is skimmed with the point of the plough before filling in the dead furrow. This is doubtful economy.

(2) Straightness: Economy of energy is not possible with careless ploughing. Straightness of furrow permits uniformity of collar pressure on the horses; the saving of time by useless twisting and turning; overcomes the danger of weeds left to grow; and demands the nicety of mechanical adjustment which gives ease and pleasure to every part of the operation.

(3) Proper "ins and outs" at ends: The ends of the ploughed land should be straight across. There should be no land left unploughed and no soil should be carried from ploughed land to head land.

(4) The furrow should be of uniform depth and width. The furrow slice should be clean cut in order that all roots be severed and the slice completely inverted.

(5) The "finish" should leave all the land in the field ploughed, the last furrow being uniform in width,

and the dead furrow the depth of the ordinary ploughing. The dead furrow should not be lifted until the judge has examined the ploughing.

(6) Evenness of top of land: Uniformity of the surface of ploughed land secures uniformity of crop other conditions being uniform. This feature is largely valuable from an æsthetic standpoint but is nevertheless economically necessary, as it influences yield and wear and tear on implements.

(7) Covering weeds and stubble: This is the most important economic feature of good ploughing. Weeds and stubble properly buried give less trouble in cultivation, are more likely to be killed and replenish organic matter. The covering of weeds is essential if the soil is to be kept clean.

Good ploughing is essential to:

(1) A good seed bed. It is as economically wise to prepare a good home for field crops as faithfully as for garden or orchard crops. The "four-fold" treasure of the vineyard is an eternal verity.

(2) Weed destruction is not possible with careless ploughing. Good ploughing destroys annual, biennial and perennial weeds and grasses.

(3) Good ploughing ensures the maximum of mechanical ease with the minimum of labour. It is the line of least resistance to the ripened fields.

(4) Good ploughing is ploughing done at the right time. In summer-fallow it is usually in Saskatchewan before June 15. "Make the cistern

before the rain comes." Catch the rain at a time when preparations have been made for keeping it. Generally speaking, ploughing other than summerfallow should be done when the soil is in the best physical condition.

(5) Good ploughing depends on a good plough. This must be sharp and cut clear and free. A badly adjusted plough with a dull share adds largely to the cost of production.

(6) Good ploughing promotes self respect. It is the testimony of many good judges that encouragement in the craftsmanship of ploughing has elevated many young competitors above the level of their environment. If there were no other arguments in favor of skilled effort this would suffice.

The number of ploughing matches held in Saskatchewan during recent years, under the auspices of agricultural societies or grain growers' associations, for which a judge has been supplied by the Extension Department of the University of Saskatchewan, is as follows:—

1910	7
1911	15
1912	21
1913	35
1914	44
1915 (up to June 12th)	62

The legislative grant earnable by an agricultural society in Saskatchewan in connection with a ploughing match, is two thirds of the prize money actually paid out, but not exceeding \$65.

The war is teaching us to trust each other and to become trustworthy ourselves. We can only do this if we consider it as our first duty to our country to do our own job, whatever it is, as well as it can be done. This should be the beginning, if not the basis, of everything else. Good business means national prosperity. It is philanthropy of the highest kind. It is the best and only foundation for social reconstruction. The scamped places in our own job become the holes in the nation's armour.—*Co-operation in Agriculture for June.*

PRINCE EDWARD ISLAND

THE INSPECTION OF MEATS

AT a Social Survey Convention, held recently in the city of Charlottetown, there was formed a Provincial Association for the Promotion of Industrial Education, with the following officers:

President, R. H. Campbell, Chief Superintendent of Education; vice-president, Mr. J. O. Hindman, president of the Board of Trade at Charlottetown; secretary-treasurer, Mr. J. A. Clark, Superintendent of the

Agricultural Experiment Station at Charlottetown.

At the convention an illustrated address was given by Dr. Pethick, Federal Meat Inspector, Prince Edward Island, on the subject of "Local Meat Inspection". A resolution was passed requesting the permanent Committee on Social Survey to wait upon the proper authorities to urge that the inspection of all meats sold be made compulsory.

NOVA SCOTIA

TRAP-NEST IMPROVEMENT

BY J. P. LANDRY, MANAGER AND LECTURER, POULTRY DEPARTMENT

THE demands upon my time in connection with extension work prohibits me from writing fully on the improvements we have been making in trap-nesting. An additional reason for not doing so at this juncture is founded on the fact that this year's records will not be completed until November 1st.

We have made some very satisfactory improvements in the records of our fowls and have followed a system

of selection by the use of the trap-nests. The pullets are placed in the pens in the fall and the records are kept during winter. The very best fowls are kept in the pens each year for our breeders; all others are turned off when the pens are mated up, about March 1st.

We have placed a new type of trap-nest in our pens; which is a very satisfactory type indeed.

MACDONALD COLLEGE

MARKETING WOOL CO-OPERATIVELY

BY H. BARTON, B.S.A., PROFESSOR OF ANIMAL HUSBANDRY

IN the extension work of the Animal Husbandry Department of Macdonald College the sheep industry of the province is being made a prominent feature. It is believed that the possibilities for sheep

in Quebec are great, and that there is a splendid opportunity and urgent need for work on behalf of the sheep interests. Through the assistance of the federal grant, the Department has been able to arrange and conduct

a number of lines of work, one of which has been the organization of local sheep breeders and wool growers associations. Through these, much greater interest is being stimulated in sheep, and flock improvement is being encouraged in every way possible. Some of the more important channels of effort are in encouraging and facilitating the exchange and introduction of pure bred rams, in establishing pure bred and high grade flocks, in marketing of lambs, and in marketing of wool.

Mr. A. MacMillan, a member of the Animal Husbandry Department, has been placed in immediate charge of the sheep work, and through his efforts and the local College Demonstrator, Mr. King, the first association was organized in Pontiac county, and, as reported previously, a start was made last year in marketing wool co-operatively. The association marketed about twelve thousand pounds of wool. The wool was graded and sold direct to manufacturers for cash at an advance of from five to seven cents a pound, or a net gain of 20 to 30 per cent to the farmers.

During the past winter, plans were made to organize a number of associations, so that this year might see a start of similar work in various parts of the province. It might be men-

tioned here that to insure that such associations be organized successfully and the wool marketed through them to advantage, a great deal of thorough preliminary work is necessary. In this, the local college demonstrator or representative has a good field for work, but he must have had first hand knowledge of sheep, and a little experience in wool preparation for market, before he can undertake this work and command the respect of sheep men.

With the assistance of Macdonald demonstrators a large number of lectures and demonstrations in the proper methods of shearing, tying fleeces, docking and castrating lambs, etc., were given in the various districts. As many farmers as possible were induced to join the associations and be supplied with wool sacks together with instructions for preparing their wool for market.

Associations were formed in eight districts and arrangements made for grading and marketing wool on definite dates at certain important points within the districts.

The following is a statement showing the various grades for the districts and the total quantities of wool marketed together with the returns made:-

WEIGHTS OF WOOL

Association	Lb. Fine Medium Combing	Lb. Medium Combing	Lb. Low Medium Combing	Lb. Lustre Combing	Lb. Black and Gray	Lb. Rejer- tions	Lb. Other Grades
Pontiac	277	25,138	11,531	2,436	660	709	2,906
Compton	100	5,362	4,330	2,663	105	289	
Stanstead	163	6,834	1,629	1,031	85	194	
Richmond	72	3,776	1,931	3,489	180	435	147
Beauharnois		1,763	2,338½	3,525	199½	469	306
Bedford		2,337	1,588	2,460	60	257	
Argenteuil		3,445	1,362	1,364	126	75	
Sherbrooke	146	3,221	1,817	605	23	233	
Totals	758	51,876	26,526½	17,573	1,438½	2,661	3,359

Total pounds of wool marketed 104,192
 Total value \$31,689.20

NUMBER OF MEMBERS AND FLEECES

Association	Number of Members	Number of Fleeces	Average Weight per Fleece	Average Price per Fleece	Total Amount Received for Wool	Average Price per Lb. Wool
Pontiac	413	6,182	7 06 lb.	\$2 15	\$13,348.30	30.57 cents
Compton	150	1,806	7 1 "	2.15	3,890.27	30.27 "
Stanstead	83	1,222	8.1 "	2.50	3,060.90	30.80 "
Richmond	75	1,360	7 33 "	2.23	3,022.07	30.12 "
Beauharnois	79	1,029	8 3 "	2.48	2,549.23	29.63 "
Bedford	55	815	8 1 "	2.46	2,045.65	30.52 "
Argenteuil	67	910	7 0 "	2.13	1,938.01	30.63 "
Sherbrooke	53	812	7 4 "	2.26	1,834.77	30.35 "
Totals	975	14,136	7 37 lbs.	\$2 29	31,689.20	30.36 cents

The results show that 51% of the wool graded medium combing, 27% low medium combing, 17% lustre combing, 3% black and gray and 2.6% rejections. The low percentage of rejections and high percentage of medium combing are a clear indication of the value of Quebec wool when properly prepared for market. The wool was marketed in good condition,

unwashed, put up in attractive shape, and was described by manufacturers as being of high quality, probably unequalled in Canada and quite the equal of similar grades of imported wool. This fact is substantiated by the prices manufacturers were willing to pay for such wool when marketed in quantities to make it worth their special attention.

Medium combing realized	31 to 31 ³ / ₄ cents per pound.
Low medium "	30 " "
Lustre "	30 " "
Black and gray "	25 to 26 " "
Rejections	25 " "

All F.O.B. point of shipment.

The above prices range from five to ten cents above the prevailing local prices, thereby netting the farmers an advance of from 20 to 30%. The fleeces ranged in weight from 7.0 lb. average in one association to 8.3 lb. for another association, and prices per fleece ranged from \$2.13 to \$2.50. It will be noted in the report that in the case of the Pontiac association, the only one of two years' standing, the increase in wool marketed as compared with the first year's output was

over three hundred and sixty per cent.

Canadian manufacturers paid these prices to the associations when they were buying wool ordinarily at much lower prices, partly because the associations had a large quantity of wool to sell at certain points where it could be inspected, partly because the manufacturers needed it and had to pay for it to get it, but also because they were getting wool well put up, and good value for their money.

ONTARIO

DISTRICT REPRESENTATIVES' CONFERENCE

THE Conference of the District Representatives of Ontario, held at the Agricultural College, Guelph, on July 14th, 15th and 16th, and presided over by the Assistant Deputy Minister of Agriculture, Mr. C. F. Bailey, had for its object a discussion of their many and varied activities and an exchange of views in regard to methods.

The winter short courses in agriculture, and the developments that are an outcome of them, together with the management of school fairs, constitute the most impressive lines of work. During the past season, 1,115 students attended the short courses. The following conclusions were reached in regard to this work:—

1. That the plan of organizing through a committee formed some months ahead in the locality where it is proposed to hold a course, gives the best results.
2. That wherever possible, the courses should be held at points accessible by railway, and where board and lodgings may be procured.
3. That the courses should last about four weeks, and that they should be held as early in the year as practicable.

A more careful selection of lecturers sent by the provincial Department was looked upon as essential, and that a clearer understanding should be had in regard to the phases of the subjects assigned them, so as to avoid covering ground already gone over.

In some counties a two weeks' course for farmers' daughters in household science, sewing and poultry work, has been held with marked appreciation.

JUNIOR FARMER ASSOCIATIONS

The Junior Farmers' Improvement Association, with several branches in each county, was organized with a view of keeping in touch with the young men who take the courses, and thus continuing the work begun. Two meetings are held in the representative's office, one in the spring and another in the fall, to discuss plans and results. In addition, monthly local meetings are held.

The activities of this organization include acre-profit, and hog and calf feeding competitions, cow recording, experiments with alfalfa and other crops and variety tests. These undertakings are not confined to the members of the organization, however, but may, in most cases, be engaged in by all who take the short courses.

This year, in one county, all the short course students were supplied with three pounds of Grimm alfalfa seed, enough to sow an acre in drills, 30 inches apart, with the object of distributing a hardy variety over the district.

In the acre-profit competitions now going on, six hundred are taking part in 43 counties. Contestants are required to make a report showing conditions and methods. The feeding competitions are less popular. The winners in each county are given a two-weeks' free course in stock and seed judging at the Agricultural College. These contests have aroused more interest than anything of the kind ever undertaken in the province.

In each county, a team of three men will be selected from among the short course men to compete in a

contest in judging live-stock and horses at the Guelph or Ottawa Winter Fair. The prizes will consist of trophies, medals and cash.

THE SCHOOL FAIR MOVEMENT

The popularity and extension of the school fair movement continues, and calls for a great deal of time and attention both on the part of the representatives and teachers. This year, 235 township school fairs will be held. These fairs, as the name implies, are exclusively for children and have no connection with the adult organizations. The crops grown at home from the improved strains of seed distributed, and the chickens raised from the eggs supplied, form the chief basis of the exhibits. Instructions accompany the supplies. Two visits from the representative are called for in order that advice and direction may be given. Prizes are given for the best kept plots. In one county there are 3,000 plots under supervision.

In addition to training the child in growing crops and in business methods, it is found that the rest of the family become interested and share in the benefits. Many parents save the produce of the plots and soon have sufficient seed of a good strain for their own requirements. The inspections also enable the representatives to make the parents' acquaintance, and to give assistance and advice where needed. This year, many of the children who have potato plots will give the crop to the war fund.

A uniform system is to be devised for keeping track of plots and entries and for identifying exhibits. Award ribbons and certain other supplies will in future be purchased by the department at reduced cost, instead of by the representatives. Next year, a vegetable-growing competition will be arranged for. With the exception of the prize money, which is raised locally, the cost of the work is met by the Department.

OTHER LINES OF WORK

Among other lines of work conducted by the representatives, the following may be briefly noted:—

1. Variety tests of corn for silage. These tests are being extended to cover practically every county.

2. Alfalfa tests. These were begun three years ago to demonstrate the importance of using hardy strains, and to provide a source of seed supply. In no case was failure reported with the Grimm and the Ontario variegated strains. For seed production the drill method is proving most satisfactory.

3. Fertilizer tests. These require to be followed up for several years, as results with certain forms of fertilizers are scarcely apparent in the year of application.

4. Promoting seed centres for the production of seed of improved quality under regulation by the Canadian Seed Growers' Association.

5. Promoting the organization of farmers' clubs, breeders' clubs, county boards of agriculture.

6. The compilation of a census of pure-bred stock, and of a breeders' directory.

7. Furthering the movement for forest-planting, drainage and co-operative undertakings.

With regard to the last, it was pointed out that a marked need should be shown by local trade conditions before organization was attempted, and that success was more likely to follow small beginnings than province-wide movements. To avoid initiation mistakes early direction should be sought from the Department.

Some disposition has been shown to throw the responsibilities of management of these organizations on the shoulders of the representatives. In their desire to further the undertaking, representatives had in some cases assumed financial obligations. Representatives were further advised not to place orders for seed, but to endeavour to direct farmers to reliable sources of supply.

The working staff, including representatives, assistant representatives (of which there are two in some of the larger counties) and office help, comprises 135 persons. In many

cases motor cars have been provided out of the county grant. Motor supplies are to be obtained in future through headquarters.

To assist the province in this work, \$114,000 will this year be provided under the AGRICULTURAL INSTRUCTION ACT.

NOTES FROM DISTRICT REPRESENTATIVES

SUPPLIED BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

WENTWORTH COUNTY

R. L. Vining, B.S.A.:—

"Recently what was perhaps the first inter-county game of baseball between Junior Farmers' Associations was played at Milton between teams selected from the boys who attended the short courses at Ancaster and Milton. The final score was 27-18 in favour of Ancaster. Everything passed off very nicely, and one feature that I liked particularly was the friendly good fellowship shown by the boys of these two counties. Excursions of this kind furnish an opportunity for the farmers of tomorrow to get acquainted.

"At the annual meeting of the Institute for South Wentworth we were able to have two of the Junior Farmers in each township elected to the Directorate of the Institute for next year. By this means I hope to give the boys some good training and also have their assistance for new enterprises from time to time."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"Mr. Finn has visited several schools that are not in the school fairs. At Mt. Brydges the pupils asked for instructions on testing milk and cream. They purpose purchasing a tester for the school and they are anxious to do testing for the farmers in the neighbourhood. They also asked numerous questions regarding different crops.

"The Junior Farmers of Strathroy continue to hold their monthly meetings, in order to keep in touch with each other, and to know what is being done in the different localities. As the boys belonging to this association come from four different townships, the Fair Board at Strathroy has offered very good prizes for the township which puts up the best educational exhibit at their fair. The boys who have been shipping potatoes and grain this spring, have written on the shipping tags 'From Middlesex Junior Farmers' Improvement Association.' This is simply a means of advertising a little, and next spring, they purpose advertising the products which they have for sale, and shipping

through the association, if it can be worked, and I see no reason why it should not be successful."

BRANT COUNTY

R. Schuyler, B.S.A.:—

"Letters have been sent to the Jersey breeders of the county inviting them to meet in our Brantford office Saturday, July 3rd. Our object is to organize these men in a Jersey Breeders' Club, as we have received in the past inquiries re the advisability of this move. Our Jersey breeders are rather few in number, possibly eighteen or twenty, but they are much scattered throughout the county. An organization cannot help but serve their interest."

GREY COUNTY

H. C. Duff, B.S.A.:—

"We inspected a field of sweet clover on Mr. Jos. Buchanan's farm and found the plants to range from 18" to 32" in height. This field was sown at the rate of 15 pounds to the acre and if the quality of the hay proves equal to the yield, we will not hesitate to talk about sweet clover in the future. On some portions of the field good catches of clover were unknown in the past. The sweet clover is thick everywhere but in a few places it shows the need of inoculation, which Mr. Buchanan neglected to do. We also looked over an acre of Grimm alfalfa with which we are experimenting on Harry Shaw's farm. Last fall the untreated portion was not as good as the rest, but this year we cannot see any difference. The field is by long odds the most uniform and best in the district."

BRUCE COUNTY

N. C. MacKay, B.S.A.:—

"On June 20th we cut our sweet clover plots and were very much pleased with the results. These were sown on two farms in a series of 8 plots, two sweet clover and six alfalfa. The sweet clover (not inoculated) yielded at the rate of 15¾ tons green

material per acre. Part of this we are curing for hay and the remainder has been fed to the stock on the farm. All classes of animals appear to be very fond of it. The clover was a magnificent stand, being about 3 feet high and as thick as it could grow. The alfalfa, which received exactly the same treatment, probably will not yield more than one-quarter as much."

LANARK COUNTY

P. S. D. Harding, B.S.A.:—

"We have been receiving quite a number of enquiries regarding the handling of grasshoppers. In view of the number of enquiries and of the large area of sandy soils, and the fact that this county was subjected to a grasshopper plague last year, we saw fit to send out in the neighbourhood of 1,000 postcards giving directions as to the method of control. We are anticipating this coming week to visit one of the worst infested areas with the idea of trying out a cure in order to get the people started towards the wholesale destruction of this pest. Last year enormous areas of crops were completely destroyed, and it was to avoid repetition that we have taken these measures."

"I am glad to report very good success from our work in distributing directions for the killing of grasshoppers. When at the Hoptown Bee Demonstration I met a considerable number of farmers from the locust affected areas, and nearly every one had tried out this treatment with decided success and said if they had not done something towards the destruction of this pest they would have lost a greater part of their crop. I was told that a few people owing to rather careless application of the poisoned bran had lost a few of their hens, but this is not at all general. I was told by a farmer at Middleville that he knew of a neighbour who lost two or three lambs by following his neighbour's advice and scattering poisoned bran in small piles over his corn field, and the lambs gained access to the corn ground with rather disastrous results."

WATERLOO COUNTY

J. S. Knapp, B.S.A.:—

"Recently we had meetings of our School Fair Boards for Wellesley and Woolwich. Mr. Strong attended the Wellesley meeting and reported a fair meeting with seven directors present. At Elmira I had every new director present and a number of old directors. I believe this was the best school fair meeting I ever attended. Every director was ready to

discuss matters and to move and second motions. A girl director was elected as president of this fair association. This is an innovation for Waterloo County. I am enclosing a copy of a request sent to this meeting by the people of that neighbourhood who have been trying to secure the fair for their section this year.

"Dear Sir,—Several of the ratepayers of this section asked me to inform you that if you will hold the fair at Winterbourne, they will allow you the free use of the hall, church grounds, sheds, etc. They think these are inducements above those which other places can offer. Hoping it may come this way, I remain, yours truly, JNO. MAHOOD."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"We attended the first annual picnic of the Junior Farmers' Improvement Association on June 15th, and although it was a very disagreeable day to start with we had a very good turn out. About thirty of the boys were present and along with their friends had an excellent time. They made a whole day of it, leaving home early in the morning and not returning till night. The day was spent in sports and a short programme of toasts. We also had a short business meeting during the afternoon. Everybody voted the affair a success and was anxious to make it an annual affair."

HALTON COUNTY

H. R. Hare, B.S.A.:—

"Our experiment in spraying with the iron sulphate and copper sulphate for mustard has been exceedingly satisfactory. Only one application of this has so far been applied but we intend to make one more application as soon as the weather is favourable. Seventy-five per cent were of such a succulent, vigorous nature, that although the leaves were destroyed yet the flowers and plants were not altogether destroyed, so that another bloom is quite evident. It is quite essential in spraying for mustard that it be done early in the season to get the best of results."

HASTINGS COUNTY

A. D. McIntosh, B.S.A.:—

"Reflecting on some of the lines of work which have occupied considerable of our attention, it is gratifying to note that results are becoming more evident daily. About a dozen young men are keeping

herd records this year for the first time in the history of the farms they live on. More pure bred sires are heading herds than ever before and the tendency to go into pure bred stock is evidenced by the large herds of uniform Holsteins and Ayrshires seen on every cross road in agricultural sections. The drainage campaign we have carried on in conjunction with the Physics Department of the O.A.C. has at last brought us a large traction ditcher to help complete the system for which we have made so many surveys. The increased acreage of alfalfa and sainfoin clovers, and the largely increased number of silos and acreage of corn would seem to indicate that our encouragement to the dairy industry at the short courses and special series of meetings is having good results. It is significant too that recently four young men have been into our office to discuss ways and means of taking a course at the agricultural college, and that the larger public school pupils from various sections are beginning a regular correspondence with our office, mostly re school fall fairs."

OXFORD COUNTY

G. R. Green, B.S.A.:—

"On the same day I went to the June meeting of the Southern Counties Ayrshire Breeders' Association at Straffordville. The meeting was well attended by Ayrshire breeders in the six counties covered by the association. Mr. E. S. Archibald of Ottawa and Mr. Dan Drummond were the principal speakers, and after a short, interesting talk by each in the town hall, the meeting adjourned to the yard, where about thirty specimens of Ayrshire cattle were for a regular judging class. The peculiar condition in connection with the marketing of milk here this season has led to an increased activity in breeding Ayrshires. Some of the condensers are adopting the 'Pay by Test' system. The association shows every indication of prosperity and this will doubtless be a record year in the history of the organization. 'Scotch Thistle,' one of the heifers sold at the sale held by this organization in December, has since that time broken the record, and several others are giving a good account of themselves. You will readily understand that this augurs well for the association, as well as some of the other things that the officers are doing.

"I suggested also to the County Council that steps be taken by the individual councils to destroy during the summer, at the same time as the weeds are being destroyed along the road, all the scrub apple, cherry and thorn trees, which are harbouring so many American Tent Caterpillars. This is really a matter to be taken up by the individual councils, but I thought it well to mention it at the meeting of the County Council, when all the reeves of these councils were present. I have reason to believe that in some of the townships, Blenheim particularly, the suggestion will be carried out."

HALDIMAND COUNTY

G. L. Woltz, B.S.A.:—

"In response to a call from the trustee board of S. S. No. 3, Rainham, Mr. Archibald and I rendered assistance in laying out a new school ground. Grading stakes were placed at regular intervals over the ground and a system of drains planned as well. Ornamental trees and shrubs will be placed on the ground in due time. These improvements will make the school very attractive, and the spirit is largely due to the work of the rural school fair.

"The trustee board of the Hagersville High School has drawn my attention to an expression of appreciation on behalf of the ratepayers in connection with the short course in agriculture held in that school last winter. In order that more of their sons might receive elementary agricultural instruction, they have asked that an agricultural teacher be regularly employed. The board has decided to take steps immediately in securing a competent man and in fitting up a suitable class room."

LAMBTON COUNTY

G. G. Bramhill, B.S.A.:—

"On Monday of this week I appeared before the County Council and asked for grants for carrying on agricultural work in the county of Lambton. I am very pleased to report that in addition to the \$500 annual grant, the following additional sums were voted:—\$25 for each school fair, \$200 to the Lambton County Corn Growers' Association and Vegetable Growers' Association."

SHORT COURSES FOR JUDGES

AS has been the custom for the past few years, the Ontario Department of Agriculture held short courses of instruction for expert judges of live stock, poultry and field crops. The live stock and poultry judges are those supplied for the fall fairs that are held throughout the province. The field crop judges are the officials who judge the standing fields of grain held by the agricultural societies. This year about one hundred and twenty field crop judges will be employed. The competition is the largest in the history of this movement, embodying about 60,000 acres of crop grown by about 6,000 farmers.

The courses were held at the Ontario Agricultural College, Guelph, during the last week of June and at the Experimental Farm at Ottawa on July 6th, 7th and 8th. The short course at Guelph was for judges residing west of the county of York, and at Ottawa for those east of that division. At Guelph about 250 judges took the course, and at Ottawa 150. The purpose of these courses is to secure, as far as is practicable, uniformity in judging.

The courses were conducted by Mr. J. Lockie Wilson, Superintend-

ent of Agricultural Societies, and were in charge of officials of the Dominion and Ontario Departments of Agriculture and other recognized authorities. The programme provided for three sessions each day. The morning and afternoon sessions consisted of demonstration lectures followed by discussions and finally the placing of the animals by the judges. A half day was given to each class of stock as heavy horses, light horses, beef cattle, dairy cattle, sheep, swine and poultry. To cover the ground two classes were going at the same time. For the standing field crop course the use of the score card was demonstrated in the judging of plots. Evening sessions consisted of addresses by prominent officials and discussions bearing on the work.

At the experimental farms the judges were entertained to luncheon each day. It was recommended by Mr. J. Lockie Wilson, Mr. J. H. Grisdale, Professor C. A. Zavitz, and others, that in future all the judges be brought together in one course meeting in alternate years at Ottawa and Guelph. The expenses incurred in the holding of these courses are provided for under THE AGRICULTURAL INSTRUCTION ACT.

PURE BRED LIVE STOCK CENSUS

THE Ontario Department of Agriculture, through the district representatives, have taken a census of the pure bred live stock in the various counties of the province. In every instance an endeavour was made to secure the name of the breeder and his address, the breed of live stock and the number according to ages. It is thought that the information thus obtained will assist materially in locating pure-bred stock by those desiring to make pur-

chases. It will also bring into notice some small breeders and encourage them to further effort. Another result is to make the "pure-bred" men and their capacity better known to each other. This is being proven by the formation of a number of county breeding clubs. These clubs make it an object to hold a series of meetings during the year at which live stock subjects are discussed. A prominent feature is the impetus that has been given to co-operation. It

should have the desirable result of extending the use of pure-bred males in grading up the stock of the country. The Department proposes to

maintain the work thus begun by having the census of pure-bred stock taken at intervals and thus kept up to date.

APPLES HALF A CROP

THE District Representative of Dundas county, having sent out enquiries as to the prospects of the apple crop, received responses which justify the expectation of only half a crop. The reports received include most of the large commercial orchards of the McIntosh and Fameuse. Injury from frost was additionally severe back from the influence of the St. Lawrence. Some

of the large orchards on the front report practically no injury. Owners of 3000 trees in Dundas sent in replies that in the aggregate would indicate one-third of a crop, a large grower in Grenville estimated the likelihood of three quarters of a crop, and half a dozen owners of 783 trees in Stormont and Glengarry said the prospects favoured half a crop.

THE DIRECTORSHIP OF ELEMENTARY EDUCATION

D R. James B. Dandeno, Ph.D., Principal of the Bowmanville, Ontario, High School, who has been appointed to succeed Prof. S. B. McCready as Director of Elementary Education in the province of Ontario, was brought up on a Wellington county farm and has had three years' public school and fourteen years' high school experience, teaching agriculture for the last three years in Bowmanville. He is a B.A. of Queen's University with honours in science, a honour M.A.,

and received his Ph.D. degree from Harvard University, where he specialized in agricultural subjects and holds a Public School Inspector's certificate. He was Associate Professor of Botany in the Michigan Agricultural College for eight years and for four summers Instructor of Botany in the Harvard Summer Schools. This summer he has been teaching agriculture in the New Brunswick Summer Schools. He has also published the researches made by him in agricultural subjects.

MANITOBA

BETTER FARMING INSTRUCTION VIA AUTOMOBILE

FOR a number of years it has been the custom of the Manitoba Agricultural College staff to tour the railway lines of the province in the interest of better farming; instruction and demonstrations were given to assembled farmers at different points at which the Better Farming Demonstration Spe-

cial, as they were called, were scheduled to stop.

This year a departure is being made. Instead of the regular visit of the trains a series of Auto Lecture Tours has been arranged and the college staff divided into five or six groups of lecturers, who are now holding

meetings in different sections of Manitoba.

By using automobiles it is hoped to get into closer touch with the actual conditions on the farms of the province, to get better acquainted with the people, to discover new methods of farming and the reason why success was not obtained in certain localities.

Although it has been satisfactory in the past to hold meetings at railway points, it is planned to hold the majority of meetings this year in places at some distance from the railways, in schoolhouses, churches and groves. Most of the meetings are being held in connection with large agricultural picnics, organized by the local associations. The forenoon is generally spent in examining silos, alfalfa fields, successful herds and well planned farmsteads. Visits are being paid to farms where unusual conditions prevailed or annoying problems had to be faced.

Each automobile carries four or five speakers—three on agricultural subjects and two on home economics. Charts and other illustrated matter were taken in each car, the various bulletins published by the Department of Agriculture, etc. Requests for the latter are being received and forwarded to the college from each point. It is unnecessary to say that it is impossible to carry very much equipment for demon-

stration purposes on tours of this kind.

Fully two hundred meetings will be held during the month and it has been gratifying to find that the municipal councils, grain growers' associations, agricultural and home economics societies and other organizations are lending their heartiest support to the Department of Agriculture and the Agricultural College in making these meetings a success.

In addition to the entire college staff several experts on particular phases of agriculture are engaged in this work at the present time.

Notwithstanding the fact that the weather has been very unfavourable, the tours have opened up with a very satisfactory attendance at these meetings, ranging from 75 to 400. Most of the meetings are being held west of Portage la Prairie as the district in the Red River Valley can be readily served at any time of the year from the college.

Among the subjects being discussed are the following: feeds and feeding tests; silage; silo construction and location; profitable poultry raising; the dairy herd; permanent agriculture; lightning control; weed eradication; alfalfa inoculation; moisture conservation; work of the agricultural college; extension service; women's work in Manitoba during our national crisis; home economics demonstrations, etc., etc.

SASKATCHEWAN

AGRICULTURAL IMPLEMENT COMMISSION

THE report of the commission of inquiry into agricultural implement sales was tabled in the legislature of Saskatchewan on June 8th. The commission consisted of Judge Newlands, chairman, Hon. W. F. A. Turgeon, Attorney-General, Hon. W. R. Motherwell, Minister of Agriculture, and

Mr. J. A. Maharg, President of the provincial Grain Growers' Association. The findings of the commission divided themselves into two main divisions: first, relating to the smaller and horse drawn implements and, second, to power outfits. With regard to the first class, the commissioners confine their recommen-

dations to the necessity for warranties and the provision of facilities for obtaining repairs. The points covered by the warranty they consider should be given by the vendors of all small implements are that the machine is well made and of good material; that it will perform the work for which it is intended and that it will be durable with reasonable care. They found the conditions surrounding the sale of power outfits were not as satisfactory as in the first case and, therefore, made the following recommendations regarding contracts:

First:—That the contract contain such detailed warranties as to the capabilities of

the machine as will remove the main opportunity for misrepresentation which now exists, and further that the ordinary rules of law governing the liability of principals for their agents be made to apply to sales of farm machinery.

Second:—That a statutory contract be adopted in which the selling companies will give proper warranties covering the construction, operation and durability of the machine sold, and that the farmers can upon application obtain necessary repairs at a place to be specified in the contract.

Third:—That the selling companies should not be allowed to take any security on land at the time of the sale, nor for six months after the delivery of the machine to the farmer.

Fourth:—That all dealings with the homestead be invalid unless with the consent of the owner's wife.

RECENT EDUCATIONAL METHODS

THE Regina Exhibition Board, co-operating with the Department of Agriculture and the Credit Men's Trust Association held the first annual farm boys' camp from July 27th to 31st. The Canadian Men's Credit Association of Winnipeg have promised \$1000 for each of three years towards the expenses. As a consequence only \$1.50 is asked from each boy to partly cover railway fare and board. All boys 14 years of age resident on farms in municipalities employing agricultural secretaries are eligible to join the camp. Four hours daily were devoted to competitions in stock judging, grain judging, identification of plants and demonstrations. A unique feature was a competition in judging by teams of ten boys from different municipalities. Over two hundred boys representing sixteen municipalities were in attendance. The trophies won in the five judging contests, comprising the judging of cattle, horses, wheat, oats and barley, were presented to the winning teams by the Hon. W. R. Motherwell, Minister of Agriculture.

The better farming trains which have been on tour have met with greater success than last year. During the first week upwards of 4,500 persons visited the trains, including 1,000 school children. At Instow the pupils of ten schools attended in a body, accompanied by the teachers. The nursery car proved a great boon to mothers. Lectures on birds, insects and poultry were specially favoured by the children.

At the end of the itinerary of the field crops train on July 24th, a live stock train of eleven cars was organized with the object of emphasizing the live stock side of agriculture, especially as regards the growing of fodder crops. Two cars of choice live stock were supplied by the Saskatchewan College of Agriculture, including a heavy draught horse, Holstein, Ayrshire, Hereford, Angus and Shorthorn cows, Yorkshire, Berkshire and Tamworth hogs, and a pen of cross-bred sheep. A covered flat car was used as a platform on which to display the animals. Two cars

formed a farm women's section, one being used as a nursery car in charge of a matron. Lectures were given on cooking, laundering, sewing and home nursing. Exhibits were made of labour-saving devices and of articles of special interest to poultry raisers. A car of mechanical appliances suitable for the farm, of steam, gas and

electric engines and farm tools, and models of buildings with particular regard to sanitation, heating and lighting. The forage crop section comprised two lecture cars in which problems relating to tillage methods, the growing of cultivated hay, clover, corn, roots and other forage crops were discussed.

BRITISH COLUMBIA

APPLE PACKING CONTESTS

THE British Columbia Department of Agriculture has notified secretaries of agricultural associations in the province that the Department will again donate prizes for apple packing contests at fall fairs. In a circular addressed to the secretaries the Department recommends the following rules to govern these contests:

(1) The management of the fair to furnish necessary tables, paper, boxes, and apples for the contest, as follows:—

- (a) One table for each competitor, about 3½ by 4 feet dimensions, with bur-lap cover, after the usual pattern.
- (b) Three Standard boxes either 10 x 11 x 20 inches inside (the Canadian box) or 10½ x 11½ x 18 inches (the American box), whichever is most generally used in the district. The boxes should be of good material and properly made, as the character of the box has much to do with the quality of the pack.
- (c) Paper. For each packer about 3 pounds of paper, 9 x 9 or 10 x 10 inches in size, depending on apples.
- (d) Apples. About six boxes No. 1 apples, of one variety, 150 per box and larger, in assorted sizes so as to provide suitable variety of pack.

(2) Entry fee of \$1; entries to close about one week before fair. Contestants to draw lots for places and numbers.

(3) Apples to be placed on the tables by disinterested persons, aiming to place on each table a fair average of the whole lot.

(4) All apples to be packed diagonally.

(5) Each contestant to pack three boxes, time to be taken when contestant places last box on the floor.

(6) To secure perfect or 20 points for speed, the contestant must pack the three boxes within twenty-five minutes; every three minutes longer will reduce the score two points, and if not finished within sixty minutes, the contestant will be ruled out.

The following score-card to apply:—

Speed	20
Uniformity of grade and pack	15
Alignment	10
Bulge	10
Height at ends	10
Firmness	20
Wrapping	15
Total	100

(7) Not less than five competitors. If less than five, 1st Prize will be \$10; 2nd Prize \$5; no third. If less than four, only one prize \$5.

Judges of fruit are instructed to give these contests special attention. The prizes are: first \$15.00; second \$10.00; third \$5.00. The prize money will be paid direct to the winners by the Department on receipt of the signed report of the judges.

PART III

Rural Science

THE MODERN RURAL SCHOOL

In order that educational officials in every province might possess the advantage of advanced ideas on the building and equipment of schools, a letter was addressed to the Deputy Ministers of Education or Superintendents of Education, asking that each forward to THE AGRICULTURAL GAZETTE what was regarded as a model for a rural school in his province in buildings, equipment and grounds. The inquiry resulted in the following contributions in reply: —

NOVA SCOTIA

BY A. H. MACKAY, SUPERINTENDENT OF EDUCATION

THE Manual of School Law of 1911 contains over twenty pages of specifications for the rural school, its library and its work, and exhibits two simple outline plans, No. 1 for the smallest and No. 2 for the ordinary rural school.

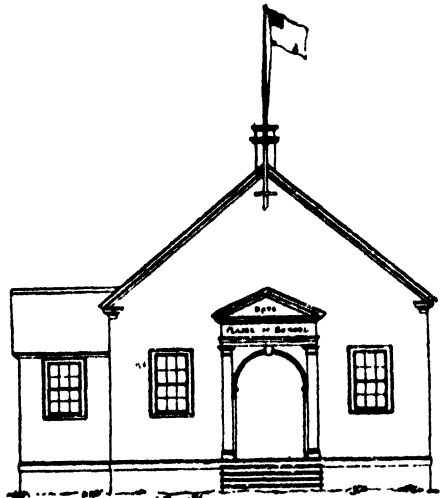
This No. 2 is not a consolidated school, such as model rural schools should be. It is a school with one teacher, in a school room in the centre normally of an area of about 12 square miles. This allows the most distant pupils to travel afoot to school from points no greater than two miles, with a minimum physical exercise of forty minutes. These maxima are probably the more essential determinants of the territorial size of the rural "school section," as it is called in Nova Scotia.

THE BUILDING

For a section with 54 pupils, the prescription runs: width of house 25 feet, length 41 feet (hall 6 feet, teacher's platform space 5 feet, seats and desks 23 feet, space to rear blackboard 3 feet), and height 13 to 14 feet.

Single patent adjustable seats and desks are recommended, although double seatings are tolerated.

Blackboard around the room, hard, dark, emery-charged, chrome-green, recommended. Hyloplate is now coming in.



— FRONT ELEVATION —

RURAL SCHOOL HOUSE No. 2

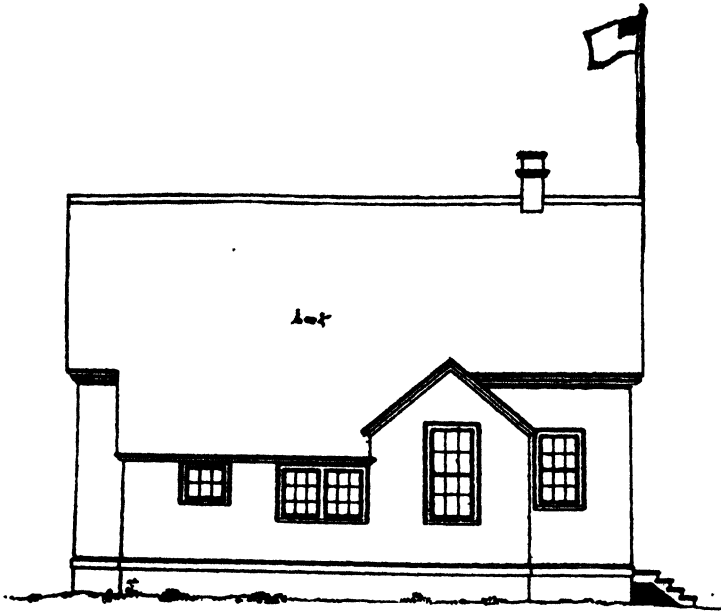
Lighting abundant and high on the left side of the pupils, with appropriate blinds.

On the right, chart and blackboard surface, behind which is (1) the fuel-room and (2) the manual training workroom with at least one bench and full equipment of tools, as shown in the elevations.

Every school room must have a library case for the preservation for reference of literature (official and

The name of the school section and the date of the erection of the building must be decorously conspicuous on its front, so that the passer-by may be able to note the æsthetic and intellectual status of the community from the appearance of its school house.

The specifications for the location, construction, shielding and care of the outhouses are considered so important that inspectors are directed



- SIDE ELEVATION

- Herbert E. Gates
- ARCHITECT -
- 11 Bedford Row -
- Halifax, N.S. -

RURAL SCHOOL HOUSE No. 2

general) supplied to, or obtained for, the use of the school or the inhabitants of the section.

It must be capable of being warmed and ventilated in the coldest winter weather, by a jacketed stove of sufficient capacity, or a hot air furnace beneath, with intakes for pure air.

There must be a flagpole on the building, or in an appropriate place on the grounds, and a Union Jack or the Red Ensign.

not to recommend the payment of any of the municipal fund to trustees of schools in which they are defective or improperly cared for, until the defects are remedied.

THE EQUIPMENT

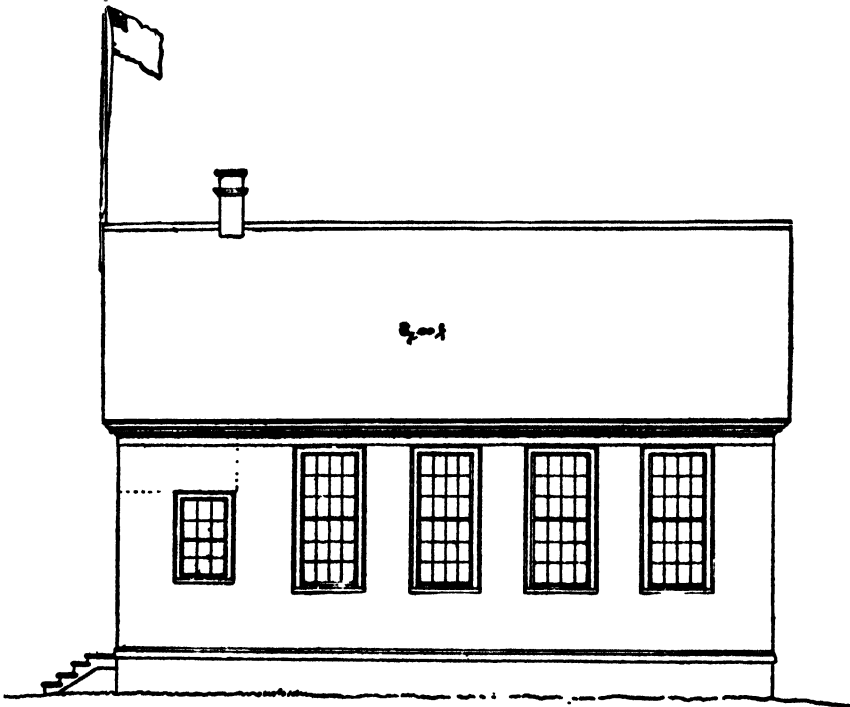
Every school must have a teacher's desk, with accommodation for the preservation of the prescribed registers, and should have such books of reference as are prescribed by the

council of public instruction from time to time.

These include a dictionary which all the pupils should be instructed to use, as well as standard works of reference on the natural history, industries and resources of the country, etc.

There must be at least maps of the Province, the Dominion, the

employed, to entitle the school to the extra rural science grants, there must be sufficient physical and chemical apparatus for the illustration and demonstration of the physics and chemistry underlying the more easily understood operations in agriculture, horticulture and forestry; local collections of minerals, rocks, etc.; plants, woods, fungi, etc.; insects;



SIDE ELEVATION. — Herbert E. Gates.
— ARCHITECT.
— Bedford Row.
— Halifax N.S.

RURAL SCHOOL HOUSE No. 2

Empire and the hemispheres, a terrestrial globe, wall cards, wall pictures, colour charts, music charts (tonic sol-fa modulator), ball frame, geometrical and drawing solid models, common and metric standards of weights and measures, coloured as well as white crayons for blackboard work and illustrations, thermometer, hand bell, etc.

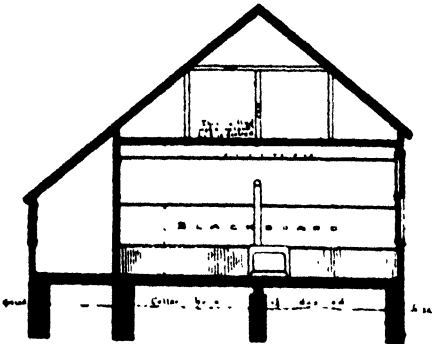
Where a rural science teacher is

charts or plates of birds, useful and injurious; physiological charts, some graphic statistics, and an annual record of local phenological observations, which are to be sent in for general compilation on printed forms to the superintendent of education, who has them bound in annual volumes for the scientific archives of the province. A summary of these have been published

annually for more than 20 years, in the Proceedings of the Royal Society of Canada, and in the Transactions of the Nova Scotia Institute of Science; and within the last few years, by the Meteorological Department of Canada.

The rural science library is an essential for the rural science school, when it must contain a considerable proportion of standard popular and reference books on all the local industries.

The school library also serves as a book club for the parents of the school section, the books being borrowed and returned by the pupils. A card catalogue and accession book are kept by the teacher; and an



A SECTION. RURAL SCHOOL HOUSE No. 2

annual report is made showing the number of books on hand, added and lost, and the number of each of the twelve classes of books read or in circulation during the year. If these reports show that the regulations have been carried out, that the library is of the 1st or 2nd class, and the circulation has in each case attained the prescribed minimum, the teacher obtains as the librarian the annual extra grant of \$10 or \$5. The library must be the property of the school section, although reporting annually to the Education Department through the inspector, who is, in Nova Scotia, the paymaster of the Department within his own inspectorate.

THE GROUNDS

These are recommended to be not less than one acre, in the most salubrious and beautiful spot obtainable by expropriation or otherwise near the centre of the section. They must be graded and æsthetically enclosed. In rural science schools, a portion of the grounds has to be set off in lots for school garden experiment plots, and another portion for flowers and ornamental shrubs.

In some places, it is found useful to have the most of the experimental garden plots at the pupil's home; a drawing of the plots on a uniform scale to be kept regularly in the school for the weekly (or more frequent) report of the pupil on the progress of the plants in each bed.

The grounds require to be ample in order to give room for games for the boys on one side and for the girls on the other side. The majority of rural sections are yet erring in not understanding the importance of ample school grounds; and many fail to put the grounds into the form recommended. The reduction of the grant is necessary to secure attention to this, as to other desiderata of the rural school, in many places.

The rural school is gradually becoming the most important social centre of the rural section. Public meetings, often political meetings, are held in it, or in the hall above it. School entertainments, concerts, etc., to raise money for library books, apparatus, or other aids, are becoming common to supplement the too often scanty vote of the ratepayers at the annual meeting.

For many years the following comment prefaced the regulations prescribing the minimum requirements for rural schools and their general equipment:—

"The school house with its grounds is a very true index of the general public spirit and intelligence of the school section. Being the common centre of habitation for a

large portion of the day of that part of every family naturally drawing forth the deepest emotions of affection and interest, the character of the school house and its environment must substantially reflect the sentiment of the community. Here we should expect to see the accumulation of efforts constantly made from year to year, embellishing grounds at first selected for their convenience, salubrity and beauty of position, and adding to the useful apparatus and general equipment of the school room, originally constructed with a

view to healthy physical, intellectual and moral development. The people should have reason to be proud of their school house, which should bear on its front the name of the school and the year of its erection. The following directions are intended more particularly for rural schools, as in the towns the custom has already been established by trustees and school commissioners, of examining the most modern improvements before proceeding to build, and of employing a competent architect.

QUEBEC

BY THE HON. BOUCHER DE LA BREURE, SUPERINTENDENT OF PUBLIC INSTRUCTION

I have been asked to state briefly what is the model for a rural school in this province, in the matters of building, equipment and grounds. I may say at once that while the Department of Public Instruction has for many years put forth much effort to encourage improvement in these directions, there are still many rural schools which fall far below the ideal. They are of the cold, cheerless type observable in so many portions of this continent. However, a new spirit has been awakened in recent years, thanks to the very rapid spread of the school garden movement. In encouraging the idea of beautifying the school grounds this movement is also drawing attention to the need of making the school building in keeping with the surroundings.

The department furnishes plans for the larger rural schools, and the school boards are constantly advised by the inspectors and from the department to make the buildings, the grounds and the equipment as attractive as possible. Moreover, for some years now the government of the province provides very substantial bonuses to the school boards making the most progress in these directions particularly. The recommendations are made by the inspec-

tors. The grants under this head last year amounted to \$10,800.

I do not think that the model rural school should be of one type. Architecturally, of course, it should express the purpose of the building. For our Canadian winters it should be built for warmth and proper ventilation. The general plans issued by the department take these points into consideration. The grounds, and the site in general, should not be some portion of the community regarded as fit for nothing else. A good site is selected for a church. The school, also, as a permanent local institution, should be well situated. The ideal grounds will have plenty of space for play, and trees will be planted in the right places on Arbor Days. Suitable hedges, such as may be seen at academies in some of our smaller towns, are possible at many rural elementary schools.

As for equipment, apart from the indispensable maps, globes and blackboards, the first consideration at the rural school should be the school library. As a community centre, the rural school is, or may be, a great factor. With a happily chosen collection of good books, suitable for the pupils and their elders, much may be done to make country life more attractive.

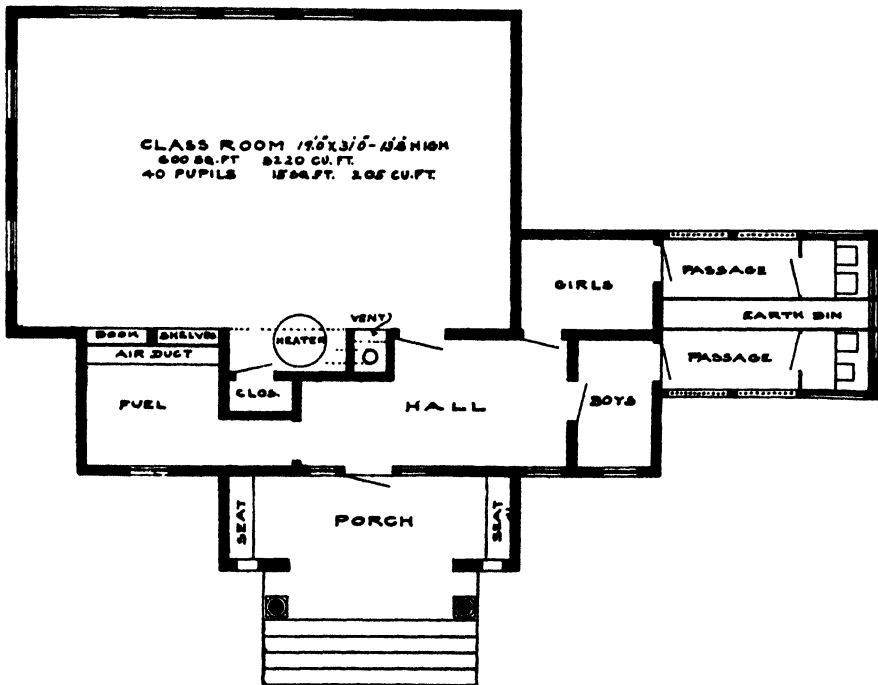
MACDONALD COLLEGE

EXAMPLE BUILDINGS

BY SINCLAIR LAIRD, HEAD OF SCHOOL - OF TEACHERS, MACDONALD COLLEGE

RURAL schools established and conducted by the United States Government in the Philippines are better than the "little old red school house" in any of the states at home simply because they are built and maintained by the Government without consulting the local inhabitants.

thus the locality has too much power and sufficient pressure cannot be brought to bear by the Department of Education to secure improvement. From this point of view the only salvation lies in greater government support and consequent greater control. Indeed, if education were a civil service as in France, controlled



FLOOR PLAN OF A ONE-ROOM RURAL SCHOOL WITH MODERN TOILETS, ERECTED IN DISTRICT 7, NEWCASTLE, WESTCHESTER COUNTY, STATE OF NEW YORK

The curse of rural education in Canada and the United States is the system of decentralised school administration with its small school boards of three or five local farmers whose interest is not in education, but in a low education tax. Another hindrance is that too little financial support is given from each government and too much is raised locally;

without political interference, there are enough educational experts in Canada to manage education satisfactorily if they had a free hand to exercise their profession, just as officials do in the navy.

Another reason why government schools for subject races are successful is that attention is paid to the local requirements, and the curriculum is

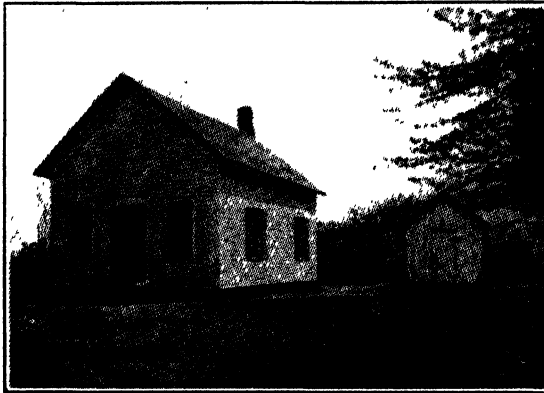
suited to the future occupation and life of the native. Indeed, preparation for future work is one of the main aims of such instruction which is more practical than bookish.

The first illustration shows the plan of a one room rural school with modern inside toilets. This might serve as a model for such a school.

additional window space in the consolidated school.

When outbuildings are detached they should be screened by wooden walls or bushes and trees as in the second illustration.

Consolidation of schools whenever possible should lead to improvement in buildings and teaching. Illustration

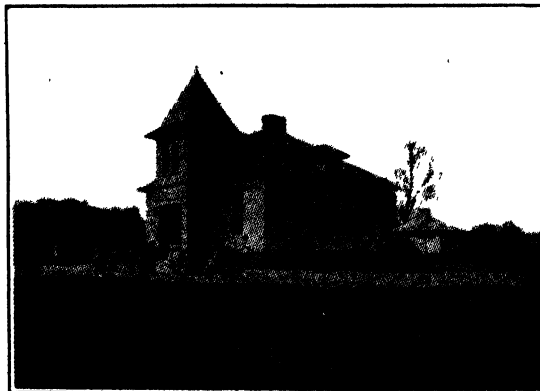


BUILDING OF A DISTRICT WHICH WAS CONSOLIDATED
WITH A THIRD DISTRICT

Such a building is comfortable, convenient, well lit and well heated. The closets are separated, accessible in all weathers and sanitary.

Many rural schools are badly lighted and should have more window space. The third and fourth illustrations give an idea of improved lighting that is made by

tions 3 and 4 show what is possible in this respect. Additional value is given if a teacher's residence is attached, so that a permanent teacher may be obtained and may remain for years. This has given Scotland, France, and Switzerland an unexcelled supply of permanent male teachers for rural districts, who live



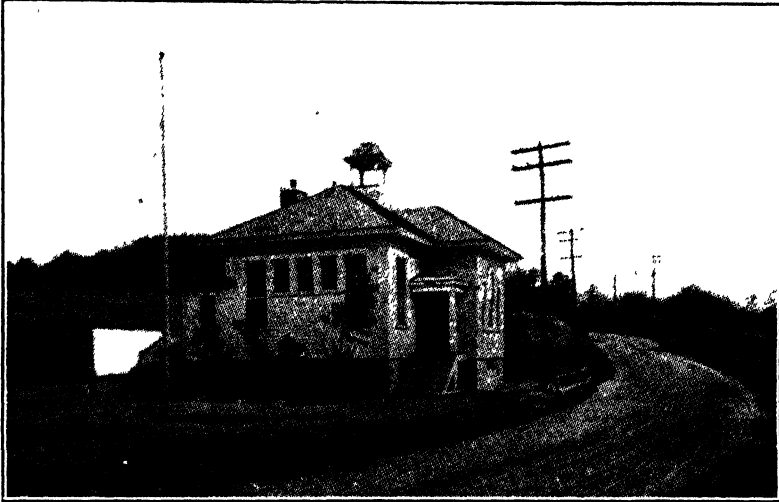
BUILDING OF CONSOLIDATED DISTRICT

and rear their families in the country and identify themselves with the community.

The equipment should all be modernized. Individual and adjustable desks should be introduced and desks

on no account should an open pail and common dipper be used.

Provision should also be made for a hot lunch even if this is only in the shape of soup or hot water for the making of cocoa. The afternoon



A WELL LIGHTED SCHOOL HOUSE

should be adjusted twice a year—at the beginning of the school year and at Christmas. Sanitary drinking fountains are indispensable also and

session would then be more profitable to both teachers and pupils.

School grounds should be used for several purposes. First, for play-



A TYPE OF MODERN SANITARY OUT-BUILDINGS

grounds; second, for school gardens or demonstration plots; and third, for decorative purposes. The fourth illustration shows the effect of even a few small bushes. Although this school is placed too near the road and its beauty is thus considerably diminished. Sufficient playground space should be kept for both boys and girls to indulge in their favorite games. The grass should be kept cut and the paths clean, flower plots well looked after and fences kept in repair. If there is a well on the playground, care should be taken that no contamination from sewage or surface water is likely to take place. If the school garden is maintained, it should be cared for during the summer months. In some cases this is done by voluntary work on the part of the pupils or a floral bee on Saturdays, when flowers are gathered for the rural church on Sundays. In many cases, however, it is found more profitable to conduct the teaching of agriculture in the schools and have

the work done on home plots, which are inspected and supervised at regular intervals by the teacher. In such a case the co-operative work in gardening in the school should be confined to the care and beautification of the school grounds and buildings. This is done by means of hardy perennials, bushes, and trees. Window boxes of creeping plants are, in some cases, employed to add additional beauty to the building and give material for nature study lessons.

Wherever possible the school building should be used as a community centre for the use of the public as well as for the children. Local libraries, as well as school libraries, might be conveniently placed in the school building even although they are separated from the schoolroom proper; and in every possible way parents and tax payers should be encouraged to take a pride in the school buildings and grounds and in the success of the teaching.

ONTARIO

SUMMARIZED FROM OFFICIAL PUBLICATIONS

SHOW me your school-houses," said a shrewd farmer. "They will tell me more about the people of your township than I can learn in any other way. The school-houses have no prejudices, they speak the truth, and the whole truth, about the attitude of your municipality towards all that makes for genuine progress." That farmer was right. "Like people, like school," is true oftener than it is not.

The above paragraph was taken from a blue book of the Ontario Department of Education entitled "Plans for Rural School Buildings," which gives particulars advisable to follow in the direction of these structures. This publication sets forth in exact terms all the requirements for an up-to-date school. It

gives the desired dimensions, details of cost, character and quantity of material required, and arrangements and equipment necessary for buildings of various sizes in the matter of accommodation. Illustrations and many diagrams drawn to an exact scale are given.

The information furnished in this book has been emphasized by a circular issued last year containing instructions to inspectors and school boards in the premises. These instructions place especial stress on sanitation and healthful accommodation not only for the pupil but also for the teacher. Where circumstances permit it is urged that the school-buildings should have both gardens and recreation grounds in connection. In short that provision should be

made for the cultivation of both mind and body.

Referring to outside premises the school site shall not be less than one acre in area, unless, owing to the smallness of the attendance or to other local conditions, the inspector finds a smaller area permissible; but in that case the area shall not be less than half an acre. It shall be accessible by good highways and not exposed to disturbing noises or noxious odours, and shall also be at a safe distance (not less than 100 yards) from stagnant water. The grounds shall be properly levelled and drained and provided with suitable walks, and shall be sufficient in extent for school games and for an ornamental plot in front. They

should also be set out with trees and ornamental shrubs, and enclosed with a neat and substantial fence or hedge, with suitable gates.

Where practicable, provision should be made for school gardens. In order to ensure good drainage and water supply, the soil should, if practicable, be sandy or gravelly, not clayey or peatty. No trees shall be placed so close to the school building as to check the free passage of air and light.

The Deputy Minister bears witness to the fact that the policy of the department as embodied in these publications has resulted in a considerable improvement in the school architecture.

MANITOBA

BY CHAS. K. NEWCOMBE, SUPERINTENDENT OF EDUCATION

MODELS have their uses. They set up an ideal. They furnish the star to which we may hitch our chariot. They are of real value to the enthusiast and the professional worker. But to the average citizen, the defects of their qualities are too apparent. They are remote and unattainable.

Just about a year ago we began to work upon the task of presenting to the trustees of Manitoba our idea, not of a model, but of a standard rural school; something not too remote, but which might be realized in every school district in the province.

We have in Manitoba sixty Consolidated Schools. They are making good progress, and here and there among the group we find school boards arranging courses in agriculture, and the beginning of some work in home economics. Almost without exception the sites of these schools comprise from five to ten acres of ground, and in several cases teachers' residences have been erected. The

number of Consolidations will increase as time goes on and the feasibility of the scheme is more clearly demonstrated to the farming community.

But there will always remain in our province many districts where Consolidation, for various reasons, is neither feasible nor desirable. In these districts "the little red school house" will remain the temple of education. Accordingly it was our purpose to outline what we considered might for the present be taken as a reasonable standard for the twelve hundred and eighty six one-roomed schools now in operation in Manitoba. The following circular was drafted and sent out to every rural school trustee in the Province:—

IS YOURS A STANDARD SCHOOL

A standard school is a good, one roomed rural school, a school which aims to give an adequate educational opportunity to the boys and girls in the district.

The requirements for such a school are:—

I. YARD AND OUTBUILDINGS

1. School site of at least two acres, properly fenced, with tree-planting well begun.
2. A school garden.
3. Two well kept, widely separated, screened outbuildings.
4. A convenient fuel shed.
5. A suitable flag pole with flag in good condition.

II. THE SCHOOL-HOUSE

1. School-house well built, on good foundation, in good repair and neatly painted.
2. Well lighted (from the left.)
3. Attractive interior decorations, fresh whitewash or kalsomine, pictures, flowers, exhibits of work.
4. Good blackboards—some suitable for small children.
5. A standard heater and ventilator.
6. Floor, desks and cupboards clean and tidy.

III. FURNISHINGS AND SUPPLIES

1. Properly placed desks, suitable for children of all ages.
2. Good teacher's desk and several chairs.
3. A good book case.
4. A good collection of supplementary readers, and of carefully chosen books for general reading.
5. Set of maps, globe and dictionary.
6. Sanitary water supply, wash-basin, soap and towels.

IV. ORGANIZATION

1. School well organized and classified.
2. Well kept records, filled in daily.
3. A working time-table.
4. Regular attendance.
5. Open at least 200 days in the year.
6. Good discipline.
7. Co-operation between trustees and teacher with frequent conferences.

V. THE TEACHER

1. Second-class professional, or better.
2. Rated by Inspectors as a good teacher.
3. Attend Conventions and read one or more Teachers' Journals.

TO THE SCHOOL TRUSTEES OF MANITOBA:—

When the above conditions are present, a school should be efficient. These conditions are within the reach of practically every district in the province. Thirty-five thousand children attend rural schools in Manitoba. Are we providing for their needs? Check over the requirements one by one—does your school measure up to the standard? If it falls short in any particular, what can you do to improve matters? Think it over. There is nothing too good for the children. Their welfare is entrusted to you.

Yours very truly,

CHAS. K. NEWCOMBE,
Superintendent of Education.

The response has been gratifying. Many school boards have made real efforts to measure up to the requirements outlined.

Desirable additions will readily suggest themselves. Provision should be made for school games. A good coal-oil stove would enable the teacher and pupils to do practical work in home economics by preparing a hot noonday lunch. A Babcock tester would make it possible for the pupils to test out the cows in the farm herd. Two or three manual training benches with appurtenant tools might well be supplied, and some provision should be made for teaching the girls to sew. A good gramophone, with a collection of well selected records, has a place in every school. The nature student will have his aquarium. A good stereopticon will help to bring home to the little dwellers on flat land the conceptions of world geography.

The tale is without end. For comparatively small expenditure the life of the one-roomed rural school may be enlarged and enriched far beyond what is to-day its all too meagre content.

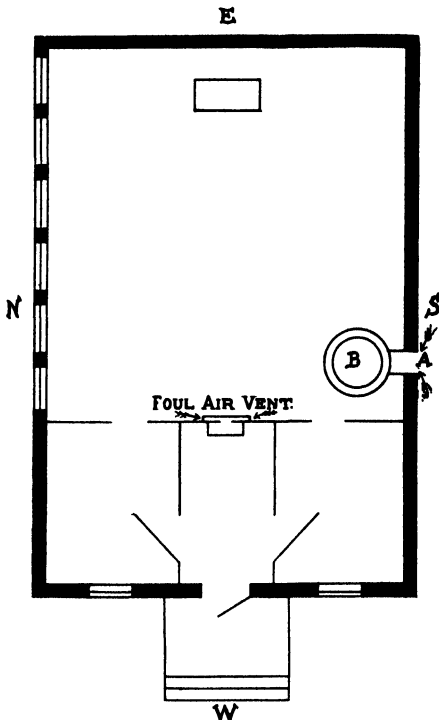
SASKATCHEWAN

BY A. W. COCKS, DIRECTOR OF SCHOOL AGRICULTURE, REGINA

SCHOOL boards are recommended to choose for a school house one which is built according to simple plans, providing that these will secure for the health

Roomy cloakrooms should be provided for the children's hats and wraps. The hooks should be strong and firmly fixed to the walls. Shelves for dinner baskets and stands for a water tank, a wash basin and a water pail should also be provided.

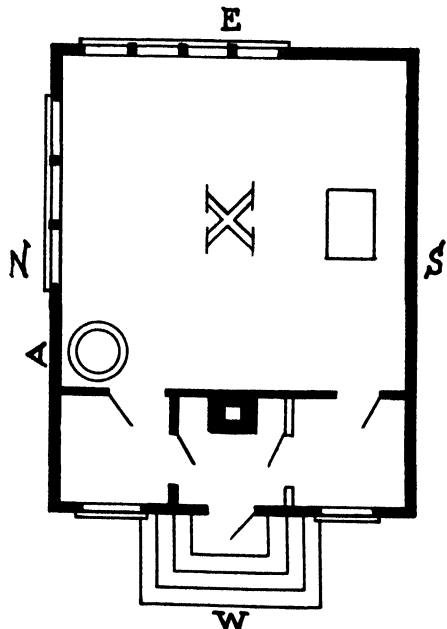
The windows in all classrooms should be so placed as to admit light only from the left of the pupils unless by reason of special conditions it is found advisable to admit light from the rear. Windows should never be placed directly in front of the pupils. They should be so arranged as to open easily from the top and bottom for purposes of ventilation.



PLAN 1.

and comfort of the pupils and teacher suitable light, heating and ventilation.

It is considered unwise for school boards in rural districts to build expensive school houses. Every school room should be built of such dimensions as to allow at least eighteen feet of floor space and two hundred cubic feet of air space for each pupil in average attendance. The width of the room should be from two-thirds to three-fourths of the length and the ceiling should be at least eleven feet high.



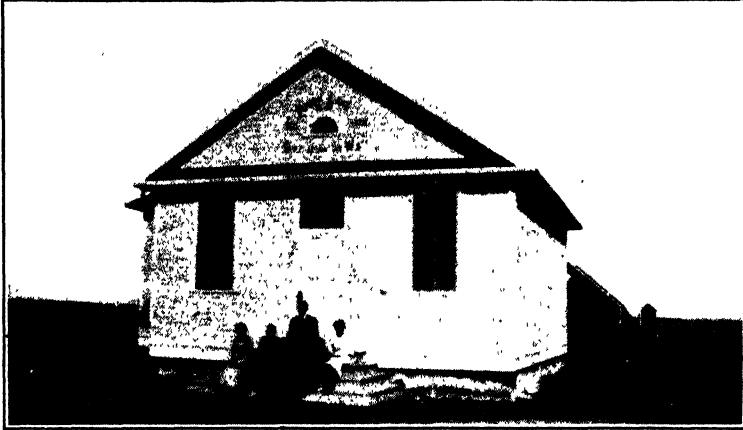
PLAN II.

The total area of the window glass should be equal to at least one-sixth of the floor space. The window sills should be approximately three feet high and the tops of the windows should extend to within six

inches of the ceiling. Storm sash or double windows with ventilators at top and bottom should be provided when the school is to be kept open during the winter months. Screen doors and windows should be provided for the summer.

and east, as in plan 2, in which case the window sills at the north are about six feet from the floor.

The building is a frame structure on a cement foundation and is provided with a combined heating and ventilating system. Fresh air is

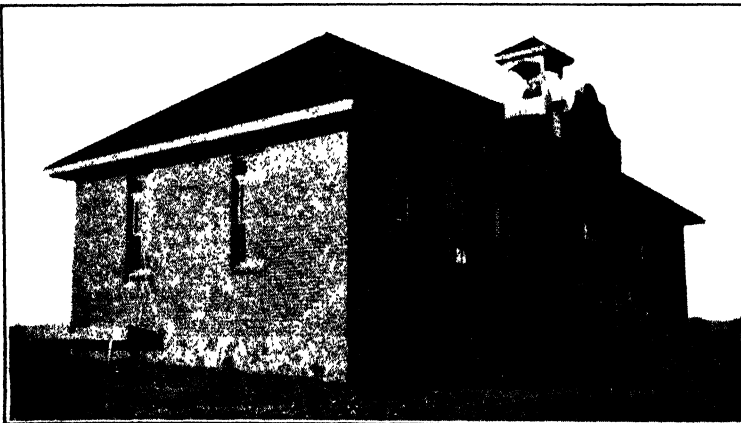


A ONE-ROOMED SCHOOL BUILDING, SASKATCHEWAN

The following is a brief description of a school building which has proved satisfactory in many districts in the province of Saskatchewan:

This building is so arranged that the light is admitted either from the north, as in plan 1, or from the north

admitted at A and then passes upward around the furnace B, being thoroughly heated before it escapes into the room. The foul air is withdrawn from the room by means of a special chimney having a foul air vent near the floor.



A TWO-ROOMED SCHOOL BUILDING, FLAXCOMBE, SASKATCHEWAN

The blackboards are hyloplate and are arranged so that the pupils facing them will have the windows on their left and at their backs.

SCHOOL EQUIPMENT

Every school room should be fur-

be provided, the desks being firmly fastened to the floors in rows with passages at least three feet wide between the outside rows and the walls of the school room.

Individual cups or a sanitary drinking fountain, also individual

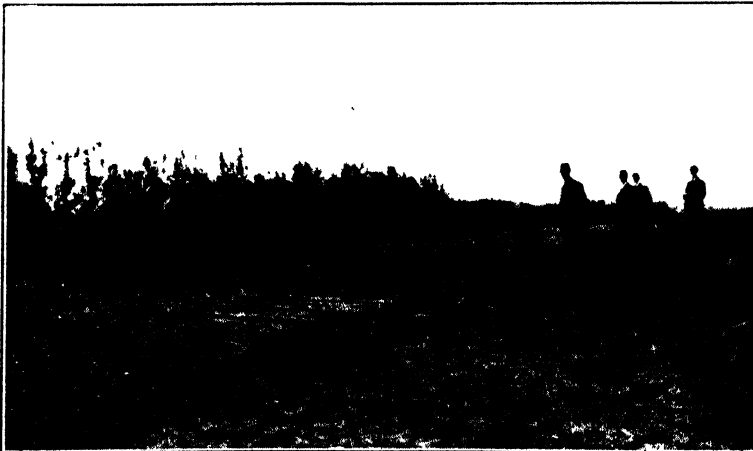


A PORTION OF THE SCHOOL GROUNDS, INDIAN HEAD, SASKATCHEWAN

nished with a suitable desk and at least two chairs in addition to the teacher's, a book case and a cupboard for supplies and apparatus. For the accommodation of the pupils a sufficient number of single desks should

towels, must be provided.

The blackboard should be at least four feet wide and not more than two and one-half feet from the floor. There should be at least one hundred square feet of blackboard space.



A SCHOOL GARDEN AND SHELTER BELT, WARMINSTER, SASKATCHEWAN

The following items of equipment are essential: a dictionary; a globe; maps of the world, North and South America, Canada, British Isles; a clock; thermometer; brushes; brooms; dust-pans; crayons; and such other articles as may be required for the proper care of the school. In addition, equipment is required for kindergarten and busy work, garden tools for school gardening and such special equipment as is required for household science. If instruction is given to pupils above grade VII a little simple physical and chemical apparatus would be necessary.

NOTE:—Much of this equipment for school gardening, household science, agriculture and elementary science may be obtained by the pupils or the teacher at very little expense.

SCHOOL GROUNDS

The school grounds should comprise an area of at least two acres to afford ample space for a school garden, experimental plots and playgrounds. They should be suitably fenced and protected on the north, east and west by a shelter belt. Ornamental beds of flowers and shrubs should be laid out so as to provide a beautiful and natural environment for the pupils. A school garden of at least one-half acre should be kept under cultivation, and should be divided into individual plots for the pupils and the experimental plot, which should be used by the teacher in connection with his work in nature study and agriculture. The illustrations will indicate what can be done in the way of beautifying school grounds on the prairies of Saskatchewan.

Cultivation, or the stirring, of the soil has two functions: it kills weeds, and it helps to hold moisture in the soil. Weeds should never be allowed to get a start. Natural moisture is better than water put on with a hose or from a watering pot. Any loose material lying on the surface of the soil will prevent the moisture from evaporating in the heat of the summer sun. You can make the top layer of soil act as the protective covering by keeping it loose and crumbly. After each rain, as soon as the soil can be stirred, take a rake and break up the surface soil. This will soon dry out, and, to one who does not know, will seem too dry. But if this layer of an inch or so of dry soil is brushed off, firm, moist soil will be found underneath, and it will remain moist even during a long drought. Whether there are weeds or not, you should cultivate whenever the surface becomes packed, in order that at all times the surface soil, or "soil mulch," as it is called, may protect the under soil and save moisture.—*Cornell Rural School Leaflet.*

It is reported by the Banker Farmer that the First National Bank of Thief River Falls, Minnesota, will loan at least \$15,000.00 to farmers for the construction of silos and the loans will be made without interest. It is stated that if the farmers of that section prove sufficiently wide-awake and alert to the opportunity, the bank will not be averse to doubling the proposition, thereby standing ready to loan \$30,000.00 without asking one cent of interest. The farmer borrowing the money must be worthy and must show the proper amount of enthusiasm and interest in the venture.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

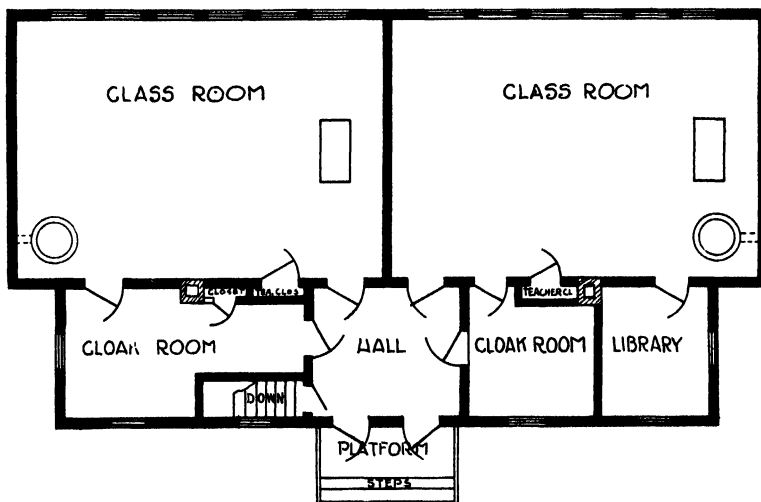
TWO MODERN COUNTRY SCHOOL HOUSES

BEFORE the country school-house can be said to be truly successful in sheltering teachers and pupils, it must attain two ends:

It must, first, conserve the health of its occupants. Without good health there can be no educational progress in any school. In fact, the improvement of health and bodily vigour of children is one of the most important functions of the school.

duced by a well designed and harmonious classroom which is attractive, cheerful and restful.

Two school buildings which may be declared unqualified successes from the standpoint of healthfulness and comfort have been completed and occupied, within a year past, in the school inspectorate of Weyburn province of Saskatchewan, Canada. The buildings are the result of the desire of two

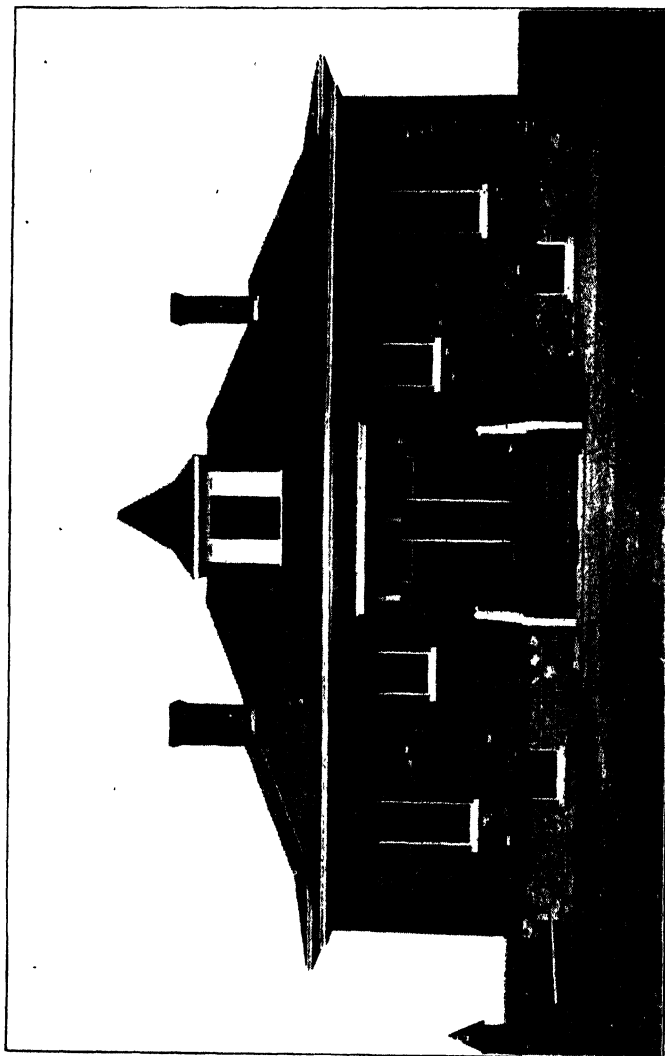


FLOOR PLAN, NEW SCHOOL BUILDING, COLGATE, SASKATCHEWAN

A second requisite of a good school-house is the comfort which it affords—not only physically but also spiritually—so that the educational process may go forward most efficiently. Under this head comes the demand for such conditions as are necessary for the actual work of instruction and study, but also those indefinable æsthetic and psychological influences pro-

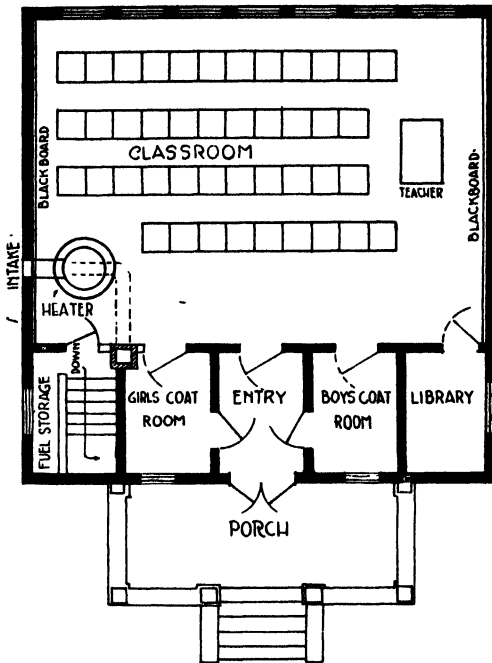
gressive boards of school trustees, assisted by an energetic inspector, Mr. A. Kennedy, M.A., to provide the most modern possible housing for their respective school children.

The building at South Weyburn is a good type of one-teacher school. It is 32 by 32 feet on the outside dimensions and contains a classroom 21 by 31 feet, arranged to seat



NEW TWO-ROOM SCHOOL BUILDING, COLGATE, SASKATCHEWAN

40 or 42 children. The basement, which extends under the entire building, has solid concrete walls, and contains a large play-room and space for future toilets. The upper walls are of brick, and the exterior is faced with red pressed brick of particularly pleasing shade. The floors, partitions, ceiling and roof are of ordinary wood construction, into which fire stops have been introduced. The roof has an unusually high pitch so that it will readily shed the heavy snows. The large porch and stairs in the front are solidly built of concrete and brick.



FLOOR PLAN, NEW SCHOOL HOUSE, SOUTH WEYBURN, SASKATCHEWAN

The classroom is entered through a large vestibule from which open cloakrooms. In one corner of the front there is a library 5 feet 6 inches by 8 feet 6 inches in size, equipped with book-shelves and a table for reading.

The classroom proper has single, adjustable steel desks and seats for 42 children. Blackboards at the front and rear are four feet high, and have been placed two and one-half feet above the floor, so that even the smallest children may use them with ease.

The lighting, heating and ventilation of the classroom are nearly ideal. The windows occupy practically an entire side, running from the ceiling to three and one-half feet above the floor. Heat and ventilation are provided by a jacketed stove which draws fresh air from a screened intake. The heat of the galvanized iron smoke pipe, which extends to the top of the chimney, creates sufficient suction in the brick flue to exhaust all the foul air from the floor line.

The building cost, approximately, \$2,600, complete.

The picture, shown on the preceding page, was taken shortly after the building was completed and does not give an idea of the shrubs and flowers which have been planted in the porch boxes and about the entire building to relieve the bareness of the school yard.

The two-room schoolhouse at Colgate, Sask., resembles in arrangement, construction and equipment the South Weyburn School. It is a plain brick building with a stone basement, artificial stone trim and shingle roof. The floors and ceilings are of wood. The basement is planned for play and toilet facilities and will probably later contain a manual training shop.

The classrooms will seat 40 children each. They are equipped with jacketed ventilating stoves; individual, adjustable steel desks and teachers' closets. Adjoining are ample cloak rooms and a library.

The building is so planned that two additional rooms can be constructed by raising the roof.

These two buildings leave little to be desired for all practical school purposes. They serve not only for the instruction of the children in the respective districts, but also are social centres for the older people, providing very necessary and helpful points of contact and co-operation. Any rural community might be justly proud of them. *From the American School Board Journal.*

HELPING THE COMMUNITY THROUGH THE SCHOOL

BY SUSAN V. POWELL, STATE ORGANIZER, SCHOOL IMPROVEMENT ASSOCIATIONS,
JACKSON, MISS.

A study of wheat or corn is more important to the boy than for him to be able to name the plants of the frigid zone. A knowledge of the history, habits, and care of live stock is worth more to him than to know the names of the huge animals that prowl through the jungles of the torrid zone. The one may be every bit as cultural as the other.

The industrial clubs for boys and girls should be made a department of the county teachers' association and the regular school work. The opportunities for correlating the school work with the club work are many and obvious. The canning club girl, who is taught how to measure accurately her one-tenth acre plot and lay it off according to direction and estimate the amount of soil she is cultivating, six or eight or twelve inches deep, is learning mensuration in a thorough and practical manner. When she keeps an exact account of the cost of her plot, including rent, fertilizer, work at ten cents an hour, and the cost of canning supplies; and from the proceeds of her club work estimates her gain or loss, she will certainly learn profit and loss, percentage and accounts in a manner she will never forget.

When she makes daily observations of her plants, the effect of rain, drouth and wind on the leaf, stem, flowers and fruit, and the diseases and pests that attack them, she is learning nature study and geography as well as practical agriculture. When she composes the written history of her crop and writes an account of her work as a club member, she prepares an English composition that calls for a knowledge of spelling, capitals, punctuation and the right use of words and paragraphing, just as if she had written on Faith, Hope and Charity.

When she learns that bacteria and spores are in the vegetables and develop rapidly and spoil the fruit unless thoroughly sterilized and hermetically sealed; when she learns of the needs for vegetables and fruits to supply a balanced ration, she is learning physiology pure and simple that she will remember when she has forgotten the number of bones in the body. When she learns the effect of light on vegetables, when she mixes zinc solder and muriatic acid to make the soldering flux, when she puts her capping steel into salammoniac and solder and find that it puts a silvery coating on the dark metal, when she studies the nature of the soil and determines what is needed in the form of fertilizer, whether lime, nitrogen or potash, she performs

experiments in chemistry that cannot be excelled for practicability or culture in any college laboratory.

When she reads the bulletins sent her by the Bureau of Plant Industry, and the farm journals containing instructive articles on her club work, she is getting the thought from the printed page instead of merely calling words without reference to their meaning, as is often done in a formal reading lesson. When she enters into the club spirit, helps to elect officers, or acts as one herself, carries out carefully the instructions sent her by those in authority, contributes the proceeds of her plot to the family income and to the wealth of her community, she is learning lessons in good citizenship and forming civic ideals that are more important than a knowledge of the meaning of gerrymandering or the substance of the eleventh amendment to the constitution.

Everything I have said about girls' canning clubs, applies with equal force to corn clubs, pig clubs or poultry clubs, or cotton clubs. Our attitude toward these industries and clubs determines their cultural value.

The industrial clubs for boys and girls are brilliant examples of the power of co-operation. The canning club work in the three years of its existence has achieved remarkable results. Beginning with only two counties in 1911, this year, thirty-three counties were organized and these club girls converted thousands of pounds of vegetable products that were going to waste into a marketable commodity; and still other thousands of gallons into palatable products for the home.

At least a score of these club girls made sufficient money from their co-operative club work to enter college, and thus saw their opportunities broaden for a useful and successful life.

These industrial clubs have changed country schools into popular social centres, not only during the school term, but throughout the vacation, when heretofore the schools have suffered most from vandalism and neglect. The club meetings bring to the school not only the boys and girls, but the mothers and fathers, to study the plans and purposes of the club work, the methods of cultivating the crops and fighting plant diseases and pests. During vacation they meet there to hold their canning demonstrations and often become aware for the first time of the needs and deficiencies of the school, and hasten to supply these. In the fall they meet there

to give reports of the work, exhibits, and judge the products and award prizes and listen to talks and addresses on practical subjects.

I have seen a group of stolid, timid country girls who were afraid of themselves and their audience, taught a lively yell which embodied the spirit of co-operation, and afterwards summoned to the canning work which they accomplished with ease and dispatch. A uniform white cap and apron adopted by the club girls and worn at public demonstrations, taught them the lesson that housework and slouchiness in dress do not necessarily go hand in hand.

We want an organization of patrons and pupils in each community under an active, interested, intelligent teacher, to crystallize public sentiment into actual school improvement. The local association should, in turn, keep in close touch with the county organization. The teacher

should be a member of it and understand thoroughly its plans and purposes. He should study these plans and modify them to suit the local conditions and translate its purposes into the needs of the individual schools. He should interest his patrons and pupils in the industrial clubs and use these as one means of vitalizing the course of study and bringing his school in close touch with the lives of the people. He should invite the extension workers and experts to visit his school and instruct his pupils in health, agriculture, etc. He should use the bulletins supplied him for supplementary work on reading, agriculture, etc. He should bring all these forces to bear on the improvement of school and community, educate his people into the habit of looking to the school for help in solving their problems and coming to the school for a discussion of these. He will thus realize the modern pedagogue's ideal of making the school the social centre of the community.

SEED GROWING CENTRES IN CANADA

BY L. H. NEWMAN, SECRETARY CANADIAN SEED GROWERS' ASSOCIATION

DURING the past ten years special efforts have been put forth throughout Canada to increase the production and to facilitate the distribution of high class seed of our ordinary farm crops. To this end the Canadian Seed Growers' Association was organized in 1904, with head-quarters at Ottawa. Until recently the membership of this association was made up of individual farmers, each of whom was required to operate what is known as a "*Hand-selected seed plot*" each year, and to select from this plot twenty-five to thirty pounds of typical heads, pods, ears or tubers, as the case might be, and with the cleaned seed obtained to sow a similar plot the following year.

After several years' experience, it was found that the number of farmers who would take this care in improving and maintaining the purity of their seed stocks was comparatively small, with the result that the amount of seed originating from these special selections was much below the demand. In order to increase this

supply the Seed Centre idea was launched in 1913.

By this system suitable districts are located for the production of a given kind of seed, and a number of farmers are then encouraged to adopt a certain variety and to grow it according to a prescribed system, so that their product may be officially recognized as "registered seed." Instead of each of these men having to operate a seed plot, they choose one of their number to do this, agreeing to pay him a certain price for a small supply of so-called "Elite Stock Seed" for multiplication next spring.

This means that these growers, with the exception of the special selector, are simply propagators of high class seed grown under special supervision, their work being inspected each year during the growing season and the seed they are offering for sale examined later. The following statement indicates the progress that has been made throughout Canada during the past few years in the organization of these centres:—

PRINCE EDWARD ISLAND

NAME OF CENTRE AND ADDRESS	VARIETY	MEMBERS
East Prince Banner Oat Club, Summerside	Banner oats	33
East Queen's Banner Oat Centre	Banner oats	11
South King's Banner Oat Centre	Banner oats	5

QUEBEC

Bagot County Banner Oat Centre	Banner oats	16
Acton Vale (Bagot Co.) Banner Oat Centre	Banner oats	6

QUEBEC—Continued

NAME OF CENTRE AND ADDRESS	VARIETY	MEMBERS
Champlain County Banner Oat Centre	Banner oats	7
Cookshire Banner Oat Centre (Compton Co.)	Banner oats	13
Dunham Banner Oats Centre (Missisquoi Co.)	Banner oats	6
Hartley Banner Oat Seed Centre (Stanstead Co.)	Banner oats	14
Hillhurst Banner Oat Centre (Compton Co.)	Banner oats	3
Lennoxville Banner Oat Centre (Sherbrooke Co.)	Banner oats	18
Lorette Centre, Banner Oats (Quebec Co.)	Banner oats	7
Stanbridge E. Banner Oat Centre (Missisquoi Co.)	Banner oats	3
St. Anselme Banner Oat Centre (Dorchester Co.)	Banner oats	10
St. Bernard Banner Oat Centre (Dorchester Co.)	Banner oats	6
Ste. Eulalie Banner Oat Centre (Nicolet Co.)	Banner oats	4
Ste. Monique Banner Oat Centre (Nicolet Co.)	Banner oats	6
St. Feleicien Daubeney Oat Centre (Lac St. Jean Co.)	Daubeney oats	5
St. Feleicien Banner Oat Centre (Lac St. Jean Co.)	Banner oats	11
St. Norbert Banner Oat Centre (Berthier Co.)	Banner oats	7
St. Prime Banner Oat Centre (Lac St. Jean Co.)	Banner oats	11
Rimouski Banner Oat Centre (Rimouski Co.)	Banner oats	14
Shawville Banner Oat Centre (Pontiac Co.)	Banner oats	13

ONTARIO

Athens Banner Oat Centre, Athens	Banner oats	4
Brantford O.A.C. No. 72 Oat Centre	O.A.C. No. 72	7
Brampton O.A.C. No. 72 Oat Centre	O.A.C. No. 72	13
Bobcaygeon Seed Oat Centre	O.A.C. No. 72	9
Dumfries and Wilmot O.A.C. No. 72 Oat Centre	O.A.C. No. 72	6
Galt Dawson's Golden Chaff Wheat Centre	Dawson's Golden chaff	8
Grand River Alfalfa Seed Centre	Alfalfa	8
Huttonville O.A.C. No. 72 Oat Centre	O.A.C. No. 72	3
Lansdowne Banner Oat Centre	Banner oats	6
Manvers Green Mountain Potato Centre	Green Mountain	12
Mount Brydges Potato Centre	Potatoes	20
New Liskeard Pea Centre	Arthur pease	4
Napanee O.A.C. No. 21 Barley Centre	O.A.C. No. 21 barley	2
Norwich O.A.C. No. 72 Oat Centre	O.A.C. No. 72 oats	8
North Gower Banner Oat Centre	Banner oats	14
Onondago O.A.C. No. 72 Oat Centre	O.A.C. No. 72 oats	7
Onondago O.A.C. No. 21 Barley Centre	O.A.C. No. 21 barley	10
Perth Banner Oat Centre	Banner oats	14
Pakenham Banner Oat Centre	Banner oats	15
Renfrew Seed Wheat Centre	Marquis wheat	6
Riverfront Wisconsin No. 7 Seed Corn Centre	Wisconsin No. 7	11
Rockford Banner Oat Centre	Banner oats	7
Simcoe Dawson's Golden Chaff Wheat Centre	Dawson's Golden chaff	9
Smithdale O.A.C. No. 21 Barley Centre	O.A.C. No. 21 barley	5
Tyrrell Banner Oat Centre	Banner oats	16
Wellington Barley Centre	O.A.C. No. 21 barley	9
White Lake Potato Growers' Association	Irish Cobbler	3

ALBERTA

Claresholm Marquis Wheat Centre	Marquis wheat	10
Vermilion Banner Oat Centre	Banner oats	14

It will be noticed that no regular centres have as yet been organized in Manitoba and Saskatchewan. By way of explanation it may be pointed out that in these provinces the need for centres is not quite so great as in the East since grain growing is conducted in the West on such a scale that it is possible for an individual farmer to produce several car-loads of seed. In the East on the other hand the surplus grain produced is relatively small.

The names of the individual growers of the centres do not appear in the member-

ship list of the association, but rather the name of the centre. The relationship of the Seed Centre towards the association and towards the Department of Agriculture is essentially the same as that existing between the individual members and these institutions.

The directors of the association, consisting as they do of representatives from the different provinces, have agreed that the principle of local initiative and local responsibility must be recognized in connection with the operations of these bodies.

To this end provincial representatives have assumed the responsibility of organizing and supervising all centres. The fact that there are now so many districts represented by experts from the provincial departments of agriculture has made it comparatively easy to introduce and carry out this policy. The results to date on the whole are most encouraging, and those closely associated with the movement look forward to seeing the whole seed question revolutionized.

By means of this system buyers will be able to purchase in car-load lots and directly from growers if they so desire. This should make it possible for every farmer who has to buy seed to obtain seed of a known variety which is true to name, of high vitality and free from weed seeds. To seed of this class the term "registered seed" has been applied, and farmers are gradually coming to understand that this class of seed is not beyond their reach.

BOYS' AND GIRLS' COW TESTS

TO encourage the testing of milk of dairy cows in portions of the state of Iowa, where it was not practicable to organize cow testing associations, there has been inaugurated a milk record contest among the boys and girls between the ages of twelve and twenty years. The prizes given varied, and included bull calves of dairy breeds, cream separators, milk scales and Babcock testers, besides cash awards.

Any boy or girl between the specified age limits who could weigh and test the milk of three or more cows for three consecutive months, was eligible to enter the contest. The contest proper closed in three months, but the contestants were all encouraged to continue the work for at least one year in order to get the entire lactation period of each cow.

A supply of monthly record sheets, feed standards, and pamphlets containing all of the necessary directions for carrying on the work, were furnished to each contestant. They were required to furnish themselves with scales and wherever possible, with Babcock testers. In case the tester could

not be secured, the contestant was required to have the creamery or station man test the samples for butter fat not less than twice each month. At the end of each month, the records were transferred to a summary sheet and the complete data mailed to the office of the association.

The manner of grading the reports was based upon the efforts put forth by the contestants, and not on the production of the cows. In addition to the reports, an essay not exceeding 500 words describing the manner in which the work was carried on and the benefit derived therefrom was required from each contestant. Any changes which improved the rations or made the production of milk more economical, were recognized, but it was realized that the contestant had no opportunity to select the cows with which he must work.

The following score was used in grading reports:—

Accuracy, 25; number of cows, 15; neatness, 20; completeness of details, 20; essay, 20; perfect score, 100.

COMMUNITY DAIRY SHOWS

THE Education Department of the Iowa State Dairy Association have instituted a system of Community Dairy Shows. These are held in conjunction with public meetings held throughout the state. Business men in each community co-operated in making each show a success, by offering attractive cash and merchandise prizes for the best animals exhibited. The exhibits, which were secured locally, consisted of males and females of dairy cattle. They were held in lumber yards, livery stables, or such other suitable places as could be secured. Programmes were opened by leading the best cows into the ring and using them to demonstrate the essential characteristics of good productive dairy cows. After the cow demonstration was completed all the animals were led into the streets, where they were judged. It is claimed that through these community dairy shows the

man milking a few cows in outlying districts will be taught the difference between the profitable and unprofitable cow.

In some localities the rural schools were closed for the day, and the children allowed to attend the shows. The students from the country and town were assembled in the high school, where lectures were given on the importance of agricultural training with special reference to dairying. At the completion of the lectures at the high school, the students, accompanied by the instructors, were taken to the barn where the cattle for the community dairy shows were kept, and instruction was given in judging. Prizes were given to the boys and girls who competed in judging. According to the report of the Iowa Department of Agriculture, during the winter of 1914 nearly 2,000 boys and girls were reached in this manner.

QUEBEC CITY'S NEW MILK BY-LAW

AT a recent meeting of the city council of the city of Quebec, a by-law was passed concerning the control and sale of milk and cream. The bylaw provides for the appointment of milk inspectors whose duty it shall be to visit all the milk establishments, cow houses or milk and cream depositories in, and possibly outside, Quebec. They are to inspect all vehicles used for the transportation of milk and cream, and wherever it appears that the products are adulterated or unfit for consumption, or not up to the legal standard, or if there is any reason to suspect any infection, the inspectors are authorized to submit specimens to the medical health officer, and in the meantime to prohibit the sale of said milk and cream. They are authorized to keep a record of all such investigations. They have the right to visit all such places or establishments at any time they may think advisable.

The board of hygiene is given authority to periodically publish in the city papers the result of chemical and bacteriological analysis. If the milk inspectors ascertain for themselves that the milk or cream contains strange or filthy substances, they may, without any formality and without indemnity, confiscate the same and prosecute the offender. The sale of milk or cream without a previously obtained license is prohibited. The cost of the license is \$5.00. No license will be issued to milkmen residing outside the city unless they have signed a declaration by which they agree to allow the city inspectors to visit their establishments and to conform to the instructions which the inspectors shall deem it advisable to give.

Any change that he may make in the number of cows, he must supply information of to the board of health without delay. The number of the license must be posted in a visible place on all the vehicles used for the transportation or distribution of milk and cream. He must also post the number of his license in a prominent place in his establishment. The licenses are not to cover more than a year at a time.

Every milkman is required to declare the number of cows he owns and must produce the certificates of inspection before being granted his license. In the event of his getting his milk from other sources, he must also give the names and addresses of the purveyors. Any change that he may make in the number of cows, he must supply information of to the Board of Health without delay. The number of the license must be posted in a visible place on all the vehicles used for the transportation or distribution of milk and cream. He must also post the number of his license

in a prominent place in his establishment. The licenses are not to cover more than a year at a time.

Every licensed milkman is required to report on the instant to the board of hygiene, or to the milk inspectors, any case of contagion or suspicious disease which may arise in his house, or among his employees or his cattle. When any infectious disease exists in his house he cannot continue to sell milk unless a person shall have been appointed by the board of hygiene to superintend his cow house. Such person so appointed is instructed to take charge of the milking of the cows and of the sale or distribution of the milk and cream. No employee thus engaged can have access to the infected house, and can have no communication, either directly or indirectly, with the persons living in the house. This superintendence is to be continued as long as the sickness exists, and until the family physician shall have declared by a certificate that the sickness is over, and until the board of hygiene shall have issued a certificate of disinfection.

ADULTERATED OR UNHEALTHY

It is provided that no person shall sell or offer for sale or keep in his possession, milk or cream adulterated or unhealthy, or milk or cream coming from sick cows or from cows which have been fed with substances prejudicial to the quality of milk or cream. Nor shall he sell milk or cream suspected of becoming possibly a means of contagion or infection, whether the source of contagion arises from human or animal subjects, or any milk which does not come up to the legal standard, namely: 3 per cent of butter, 12 per cent of solid matter and a density of between 1029 to 1023 at a temperature of 60° F. The cream must contain at least 18 per cent of butter and the skim milk must contain 9.3 per cent of solid totals. No crude milk or cream must contain more than 500,000 bacteria per cubic centimetre in summer or more than 250,000 in winter.

All milk and cream sold or exposed for sale contrary to the provisions of this bylaw may be seized and confiscated by the milk inspectors or any health officer, and the license of the involved person forfeited. No person shall sell or offer for sale any milk from which some important constitutive element shall have been extracted, or which shall have been diluted with water. Nevertheless skimmed milk may be sold in cans bearing on their outside the word "skim" in letters of at least two inches in height, providing it is delivered in measures similarly stamped. It is forbidden to sell

any milk or cream to which any preservative or any other foreign substance shall be added. No milk or cream shall be sold during the sale of thirty days preceding parturition and for at least ten days following the same. Milk or cream coming from cows suffering from any disease must not be sold as long as such sickness shall last or convalescence therefrom. Any proprietor of milk cows suffering from disease shall at once notify the board of hygiene.

SANITARY PREMISES

The cow house of a milk or cream producer must contain only cattle of the bovine race. Hogs, fowl or other animals, except the horse, must be proscribed from the house stable. The cubic space of air shall be at least 600 feet for each cow. The cow house shall be lighted by windows the glass surface of which must be equal to at least one-tenth of the surface of the floor. The floor of the stable must be water-tight and must be inclined towards a little ditch. The said ditch shall be connected with a drainage pipe inside the stable. All drainage pipe connections must be provided with safety valves. The inside walls of the stable must be washed with lime at least once a year unless they be painted with oil, when there must be a complete washing. Manure must be taken out at least twice a day and removed at a reasonable distance approved by the Inspector.

Care must be taken in milking and handling, and the utensils used must be kept free from impurities. If accidentally the milk is soiled such milk must not be delivered to customers. The utensils employed for the milking must be brought into the stable at the last moment and carried out immediately after.

All dairies must be separated from other apartments. They must be fifty feet away from any stable or pig house or from any pile of manure or refuse. The windows of such dairies shall be protected by fly-nets from the first of May to the first of November. All the cans used in the dairy must be employed exclusively for that purpose, and must be cleaned and washed after every service and rinsed with boiling water previous to using them again.

IMPLEMENT CLEANLINESS

The milk or cream may be pasteurized twelve hours in summer and eighteen hours in winter after the milking and must be delivered in the twenty-four hours after their pasteurization. Bottles or cans collected from consumers must be washed in boiling water at the establishment of the milkman. Such establishments must not be used for any other purpose than for milk. Bottles or other utensils taken from houses where any contagious disease

exists must not be taken possession of before they shall have been disinfected under the authority of the Board of Hygiene.

Between the first of May and the first of October it is forbidden to allow cans filled with milk or cream to stand out on the platforms of railways or other transportation companies longer than fifteen minutes unless such cans shall have been under cover from the sun. At the point of destination all cans not yet cleaned within half an hour must be placed in an ice-house or under cover from the sun. The empty cans must be washed by the sender before being deposited in the city stations to be sent to the country. All cans shall be exhibited on demand to the representative of the board of health, and, if in his opinion, they have not been sufficiently washed, they shall be used as exhibits before the courts of justice or be washed at the expense of the sender.

Every proprietor of milk or cream depository where milk or cream is sold must see that the said milk or cream is kept in an ice-house. The milk or cream must be kept in the can in which it has been brought, unless the municipal board of hygiene shall have permitted otherwise.

The well from which the water is taken for the cows must never be dug under a stable. It must not be at a less distance than fifty feet away from any stable, or pig house, or from any pile of manure or refuse, unless such well be an artesian well or tubed, with the approbation of the board of hygiene.

When a cow house or dairy is not kept in conformity with the prescriptions contained in the bylaw, the municipal veterinary surgeon, or the veterinary surgeon authorized by him, must prohibit the sale or distribution of milk or cream coming from such establishment.

THE TUBERCULINE TEST REQUIRED

Every cow brought into the city, or kept to be sold or utilized for milk, must be first brought to the cow stable kept by the city, or to such other place appointed for that purpose by the city engineer. Every cow must be submitted to the municipal veterinary surgeon to be subject to the tuberculine test, or to some other medical or scientific process suitable to ascertain if such cow is affected with tuberculosis, and if its milk is fit for domestic usage or to be used as an alimentary substance. On Tuesdays and Wednesdays of each week the veterinary shall, in the said cow stable, submit to the test each cow brought in to be sold or utilized. If the owner of the cow wishes to have it inspected on any other day he may have such test made by the veterinary at his own expense. If the cow is found unfit it

must be removed outside the city limits or slaughtered forthwith. If the cow is found healthy and fit, a certificate to that effect must be delivered to the purchaser or owner. No person in the city shall sell or purchase any cow that has not been subject to inspection and submitted to the tuberculine test, and unless a certificate has been issued setting forth the fact. The certificate is only good for six months, to be computed from its date. Every year from the first of May to the first of July each milkman is bound to produce to the board of hygiene the proof that he holds a certificate of the nature described. Any milkman failing to conform to this regulation shall be held to have been guilty of violation of the bylaw. In the case of cows kept outside the city the tuberculine test must be applied by the municipal veterinary, or by the veterinary authorized by him, and at the expense of the owner. If bacilli of tuberculosis is found in the milk such certificate shall be cancelled.

All milk shall be considered as fresh milk which has been milked within eight hours from the moment when it is delivered

to the consumer, and such fresh milk shall be put in cans showing at a visible point in letters not less than one inch long the stamp "fresh milk." The milk which has been drawn since more than eight hours may be sold in cans, bottles or flagons, not stamped as in the past.

The cans employed by persons selling milk must not carry an added neck but must have at the top only an opening wide enough to allow facility for cleaning. Such opening must be closed in the distribution of milk to the consumers, but cans carrying five gallons or more may have a wide neck of not less than three inches in diameter, the opening of which shall be closed with a recipient of lead setting therein.

Any person found guilty of any violation of the provisions of this bylaw is liable to a fine not exceeding \$100, and, in default of payment, to imprisonment for a term not exceeding three months. The license or permit of any such offender may be suspended or finally cancelled by the medical health officer, or any officer holding authority from the board of hygiene.

SOCIETIES AND ASSOCIATIONS

THE HOLSTEIN-FRIESIAN ASSOCIATION

Mr. W. A. Clemons, Secretary of the Canadian Holstein-Friesian Association, reports that during the month of June the records of 52 cows and heifers were received and accepted for entry in the "Record of Merit."

Mr. Clemons also reports 28 cows and heifers qualified for admission to the "Record of Performance" during the month of June. Four of these exceeded 20,000 pounds of milk for the year. In the mature class, Lillie DeKol Lucknow leads with 22,189 pounds milk and 1,051.25, pounds butter. The record for butter is the largest yet reported for a cow qualifying under the R. of P. test, displacing that of May Echo, whose photograph and record were published in the June number of THE AGRICULTURAL GAZETTE.

PRINCE EDWARD ISLAND SHEEP BREEDERS

The annual meeting of the Prince Edward Island Sheep Breeders' Association was held in Charlottetown on July 22nd.

The report of the secretary showed a balance on hand of \$40.

For the year ending June 30th, 1915, 2,158 grade sheep and 315 pure bred sheep had been insured against destruction by dogs. Two claims had been paid amounting in all to \$1.00.

In conjunction with the Department of Agriculture sheep dipping demonstrations had been held in Queens and Kings counties and about 7,500 sheep dipped.

The experiment in the co-operative marketing of wool carried on in conjunction with the Department of Agriculture resulted in 5,616 $\frac{1}{4}$ lb. being marketed. The finest grades brought 33 $\frac{1}{2}$ ¢., second grades 33¢., lustre 32 $\frac{1}{4}$ ¢., black and rejects 25¢., tags 17¢., The total amount received for the wool was \$1,798.80. The total expense in connection with it was \$29.12 or a little less than $\frac{1}{2}$ ¢. a pound.

According to the constitution two directors go out each year. The lot this year fell on Michael Keenan of Georgetown and J. M. Laird, Kelvin. The officers for the following year are, C. B. Clay, Bridgetown, president; Albert Boswall, 1st vice-president; C. M. Arseneault, 2nd vice-president; Ernest Lund, Daniel Stewart, Rev. Dr. Gauthier, directors. According to the incorporation act the secretary of agriculture is secretary.

Considerable discussion took place regarding the work for next year. It was decided to carry on the co-operative marketing of wool more extensively and arrangements were proposed for the forming of local associations all over the province. The name of J. M. Laird, the retiring president, was proposed as markets' manager for the association.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF FIELD HUSBANDRY

Division of Field Husbandry: Summary of Results, 1914; Bulletin No. 83, prepared by W. L. Graham, B.S.A., Assistant to the Field Husbandman, and the Superintendents of the Branch Experimental Farms and Stations. This Bulletin treats and advises on the Rotation of Crops, gives tables showing the cost of production, the results of shallow ploughing and subsoiling as compared with deep ploughing, and the values of different fertilizers. It also details the weather conditions and results of experiments in cultivation at the different experimental farms and stations.

THE FRUIT BRANCH

Fruit Crop Report, No. 2, July, 1915, directs attention to the iniquitous practice of some shippers in sending out strawberry boxes only half or three quarters full. It furnishes reports of the growing fruit situation up to June 28th from Quebec, and the Okanagan Valley, B.C., Lambton County, Ont., the Annapolis Valley, N.S., Oshawa, Ont., Winnipeg, Man., Oregon, Georgia, and Sodus, N.Y. Reports of the apple prospects are given from ten districts covering the entire country. British Columbia promises an average crop, but generally the apple crop will be much lighter than last year. Frost did considerable damage to small fruits, the decrease in which compared with 1914 will run from 35 to 60 per cent. Peaches promise well. A note in the report states that the British war office will require large quantities of jam this year and Canada will be afforded an opportunity to fill orders. No jelly will be required and no mixed jams will be accepted.

THE ENTOMOLOGICAL BRANCH

"Applied Entomology in Canada; Its Rise and Progress" is the title of a 15-page reprint of the address delivered by C. Gordon Hewitt, D.Sc., F.R.S.C., Dominion Entomologist, as president of the Entomological Society of Ontario at the fifty-first annual meeting of the Society last year. Notice of the address, which was of a most comprehensive nature, dealing with the work that was being done in the suppression of all varieties of insect pests, both by the provinces and the Dominion, appeared in THE AGRICULTURAL GAZETTE for June.

Hessian Fly Ravages. A special circular recently issued by the United States Department of Agriculture reports that the Hessian Fly has inflicted immense damage during the past season to the wheat crop throughout an area which, in the north-east, includes the states of Illinois, Indiana, Ohio and Pennsylvania. "The loss to the 1915 wheat crop," the circular states, "will undoubtedly amount to millions of bushels." It is not unlikely that some damage from the Hessian Fly will occur in certain sections of south-western Ontario and the notice has been published with a view to drawing the attention of farmers to this fact in order that outbreaks of this pest may be reported and that steps may be taken to protect the wheat sown in September and October. *No wheat should be sown in August.* The Dominion Entomologist, Department of Agriculture, Ottawa, will be pleased to hear from farmers who have experienced Hessian Fly damage this season and will examine suspected plants. All communications and samples up to 11 ounces in weight so addressed may be mailed "free," and the assistance of the Entomological Branch is at the service of every Canadian farmer.

THE LIVE STOCK BRANCH

Ayrshire Records. The Canadian Ayrshire Breeders' Association have issued a booklet of milk records made by Ayrshires. The records have been revised up to May 1st, 1915. A summary shows that 168 mature cows gave a yearly average of 10,234.44 pounds of milk, 411.43 pounds of butter fat; 53 four-year olds gave 9,276.20 pounds milk, 376.79 pounds butter fat; 102 three-year-olds gave 8,276.38 pounds milk, 343.46 pounds butter fat; 244 two-year-olds gave 7,489.03 pounds milk, 306.42 pounds butter fat. The little brochure is illustrated with pictures of champion cows, including Milkmaid 7th, holder of the Canadian record at 16,696 pounds milk, 729 pounds butter fat. It also gives the scale of points for excellence of both bulls and cows.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

PRINCE EDWARD ISLAND.

A circular issued by the Prince Edward Island Department of Agriculture announces competitions in fields of standing grain. Three competitions are to be held in each county, fifteen prizes ranging from \$10 to \$2 being given for oats, seven for wheat ranging from \$8 to \$2, and four for barley ranging from \$6 to \$2. The circular gives rules and regulations and plan of judging.

QUEBEC

The Annual Report of the Pomological and Fruit Growing Society of the province of Quebec for 1914 is a publication of 183 pages. It details in exactness the proceedings at the annual summer meetings of the society held in the town hall, Abbotsford, September 9th and 10th. A number of instructive addresses are embodied in the report regarding the care of orchards and the care and cultivation of fruit trees and bushes. Much valuable information is furnished on spraying, packing, transportation, preserving and co-operation. A memorial notice of the late Dr. Wm. Saunders and a list of awards in various competitions close the report.

The Educational Record is a quarterly publication through which the Protestant Committee of the Council of Public Instruction communicates its proceedings and official announcements. Nature Study and Elementary Agriculture receive considerable attention. Articles are given on "The Rural School Library," "The Educational System of Rural Denmark," on Forestry and similar subjects. Reports of the Inspectors are also published along with a variety of official information.

Appearance of Crops in Quebec. A bulletin issued by the Provincial Department of Agriculture furnishes information on the condition of the crops in the province up to July 10th. The appearance of the crops is described as very good, being 80 per cent, the same as last year, against 79 in 1913 and 77 in 1912. There were 186 hours of sunshine in May and 226 in June. Potatoes, oats and barley showed 82 per cent, wheat, Timothy hay and other crops about 80 per cent. Tobacco and flax make the poorest showing, or only 78 per cent. Reports from every district and from the fruit stations are given.

The Maple Sugar and Syrup Industry. Circular No. 2, Department of Agriculture. "Many people will be surprised to know," says this circular, "that our sugar bushes yield annually more than our orchards." According to the last census, the province of Quebec produced in 1910 9,427,694 pounds maple sugar and 984,282 gallons of maple syrup, for a total value of \$1,680,393. For the same year the total value of the fruit crop was only \$1,469,537. The circular deals with the sugar-making schools established by the Quebec Department of Agriculture, the free distribution of samples of sugar, the legislation passed to protect the industry and ends with a few practical hints for sugar-makers.

Natural Incubation and Rearing. A circular of eight pages published by the Quebec Department of Agriculture and

giving practical advice on natural incubation, choice of setting hens and care and feeding, care of the chicks at hatching time, etc.

The Profitable Feeding of Poultry. Circular No. 7 issued by the Quebec Department of Agriculture. A practical circular of four pages on the feeding of poultry, emphasizing the value of green fodder.

Fattening Poultry. Bulletin No. 5 of the Quebec Department of Agriculture. This bulletin of eight pages contains fairly complete information on the crate-fattening of poultry. The following are dealt with: Making of crate, feeding, preparation to fattening, results of an experiment on twelve chickens fattened in a crate, preparation of chickens for the market, plucking, packing for the trade.

Ten Years' Practise and Experiments on Poultry. A text-book on poultry keeping specially adapted to the conditions of the province of Quebec, prepared by the Poultry Manager at the Oka Agricultural Institute and published by the Quebec Department of Agriculture.

This bulletin of 127 pages is the result of ten years' experiments and observations and should be a very useful and very valuable guide for the Quebec breeder.

ONTARIO

Report of the Minister of Agriculture, 1914. In the letter of submittal to the Lieutenant-Governor, Hon. J. S. Duff, Minister of Agriculture, in the annual report of his department, refers to the war and to the gift of 250,000 bags of flour for relief of the Belgians in England. In response the town council of Hackney sent a formally drafted resolution, inscribed on parchment and bearing the town seal, thanking the government of Ontario for its gift. A facsimile of the document forms page 4 of the report, the frontispiece being a photogravure of the interior of the new dining hall at the Ontario Agricultural College. An analysis of the general operations at the college follows, succeeded by a summarised review of the work of the District Representatives. Reference is made to the admirable work being done in connection with the rural schools. Some account is given of the taking over for actual occupation of the new premises of the Ontario Veterinary College, now in close affiliation with the University of Toronto. Owing to the demands of the war, there was a decrease of the number of students from 373 in 1913-14 to 334 in 1914-15. Statistics relative to bulletin distribution show that a total of upwards of 600,000 copies of different publications were circulated. Reviews follow of the work of the agricultural

societies, live stock organizations, Farmers' and Women's institutes and the fruit branch. Suggestions are outlined for the governing of rural fairs and for prize competitions in sowing, reaping, ploughing and judging. Particulars of efforts to combat the inroads of the army worm and the grasshopper and advice as to the cultivation of alfalfa are worthy of attention, as is also some excellent information on the use of electricity on the farm and some facts regarding co-operation and marketing. Reports on the Monteith Demonstration Farm, on Colonization and Immigration, on Factory Inspection and the Stationary Engineers' Branch complete an eighty-page blue book.

Ontario Agricultural College Annual Report, 1914. The fortieth annual report of the provincial agricultural college and experimental farm at Guelph shows some change in its make-up. Instead of as in former years, containing particulars of all the work undertaken by the college, the present report presents a general review of the operations of the past year, leaving special matters to be dealt with in periodical bulletin form. The president, Dr. G. C. Creelman, gives some account of an authorized visit paid by him in the fall of the year to New Zealand and Australia. As well as dealing briefly with agricultural matters in those colonies he refers to the state of similar affairs in China and Japan. His conclusion is that having regard to everything, comparisons generally favour Ontario, "where the blanket of snow and the keen frost prevent the leaching of fertilizers from the soil through a greater portion of the year and where more vigorous climatic conditions require keener, more robust constitutions for dealing with the situation." Tribute is paid in the report to the good work being done by district representatives, who are all graduates of the college. Emphasis is also laid upon the excellent results being derived from agricultural instruction in the rural schools and by means of the short courses. Details are supplied of the methods adopted in this connection, of intentions for the present year, and of the attendance at the courses. A five-page synopsis of the work of the college is of special interest, dealing as it does with the efforts made to check the onward march of the army worm, the suppression of fruit diseases and of weeds, experimental orchard work, winter injury to fruit trees, study of soils, researches as regards field crops, animal husbandry matters and kindred subjects. Particulars of the Macdonald Institute courses in household science, with names of successful students, and the financial statements of the college, comprise the balance of the report.

Women's Institutes, Report for 1911, Part 1. The fact that it has been found necessary to divide the annual report of the Women's Institutes of Ontario into parts indicates the important place the institutes have come to play in public welfare. There were at the close of 1914, 843 of these institutes with a membership of nearly 24,000 women. Part 1 comprises 167 pages, containing statistical statements showing the strength and work of the movement, by which it would appear that the exact membership up to December 31st last was 23,689, the number of meetings held 8,502, and the total attendance 202,502, an average for each meeting of within a fraction of 24. It would seem that Halton, with a membership of 525, is the strongest institute district and Haldimand, with its 232 meetings and an attendance of 5,440, the most active. East Northumberland can, however, lay claim to the best average attendance with 39 for each meeting, East York following close after with 38. The total receipts of the institutes amounted to \$65,048 and the expenditure to \$42,185, leaving a favourable balance of \$22,863. East Hastings can boast the highest receipts with \$1,855.19 and the highest expenditure with \$1,606.61. East Lambton was seemingly the most economical, having a balance of \$817.34. Addington with 22, South Norfolk with 23, East Nipissing with 24, and Russell with 28 are the smallest in point of membership. A list of district officers is given along with announcements for the current year and typical programmes of monthly meetings. A review of the activities by the Superintendent precedes verbatim reports of the Eastern Convention at Ottawa, the Western Convention at London, and the Central Ontario Convention at Toronto in 1914 and the annual general convention at Toronto in 1913. Addresses are included by leading ladies and by the Dominion Minister of Agriculture, the Premier of the Province, the Provincial Minister of Agriculture, Sir Adam Beck, Dr. C. C. James, Principal Falconer, Dr. J. A. Amyot, Prof. R. W. Graham, and Venerable Archdeacon Cody. A series of selected papers conclude the report.

Bee-Keepers' Association Annual Report, 1914. There is a large fund of information in the 35th annual report of the Ontario Bee-Keepers' Association. A feature of the report is the spirit of hopefulness that marks it, despite the disappointingly short crop of last year. The president in his opening address urged beginners to persevere. At the same time he and other speakers denounced the policy of booming the avocation, as those already in it often experienced difficulty in making the business profitable. Discussions are recorded on many matters of interest, such as the destructiveness of the

King Bird, the value of the smoke introduction of queens, ways of improving the crop of honey, the advisability of giving a comb with eggs or larvae in a hive with an unfertilized queen, the inroads of European foul brood, the best manner of putting up exhibits, sweet clover as a bee food, the transportation of hives, the wintering of bees and a variety of kindred subjects. Several subsidiary reports and a number of practical addresses by leading authorities are given.

Fruit Branch Circular, No. 28, issued by the Ontario Department of Agriculture gives reports of the fruit prospects in June and advice on "Care of the New Strawberry Bed." It gives the "fruit pests that can be controlled now" as Cherry Fruit Fly, Pear Slug, Brown Rot of Peaches, Plums and Cherries, and Pear Blight. The circular is published free on application to the Branch.

Ontario Veterinary College Calendar, 1915-16. The calendar besides setting out the range and method of studies gives a brief history of the College from its foundation, list of students and graduates and also illustrations of operations.

MANITOBA

Report on Crops, Live Stock, Etc. This is Bulletin 91 of the provincial Department of Agriculture. Frost in the early part of June damaged fodder corn and garden vegetables but only slightly checked the grain crops. Dairying was in a healthy condition. Creamery butter increased from 2,931,138 pounds in 1912 to 4,761,355 pounds in 1914, and dairy butter decreased in the same time from 4,333,905 pounds to 3,889,000 pounds. Cheese decreased from 536,618 pounds to 471,355 pounds. The area under wheat in 1915 is 3,664,281 acres against 3,366,200 acres last year. Oats, barley and flax all show an increase: Rye and peas a decrease. Potatoes show an increase from 60,484 acres in 1914 to 67,343 acres in 1915. Timothy, clover and alfalfa show increased acreage but Brome grass, Rye grass and fodder corn show a decrease. Horses in the province are returned as 329,994 against 325,207 in 1914; cattle as 631,005 against 498,040; sheep as 76,577 against 75,100 and pigs as 286,433 against 325,416.

SASKATCHEWAN

The Eighth Annual Report of the Secretary of Statistics contains review of the crop conditions and live stock situation in 1914, the average yield for ten years, details of marketing, shipping, wages and prices, particulars regarding population, enumerating

tables for seven years of live stock, and a large amount of meteorological data. All classes of live stock showed a slight increase in 1914 compared with 1913.

BRITISH COLUMBIA

Poultry House Construction. This is Bulletin No. 63 of the Live Stock Branch. The contents of the 40-pages of which it consists, are well indicated in the title. Illustrations of buildings, finished and in partition, diagrams and details of measurements, take the greatest amount of space, but the descriptive text is full and enlightening.

The Twenty-Fifth Annual Report of the British Columbia Fruit Growers' Association for 1914, recently issued, bears testimony to the good results derived from the "apple weeks" that were held late in the fall. Following them a marked increase was noticeable in the demand for British Columbia fruit and a corresponding decrease in the call for the imported article. Development of the fruit trade with Australia and New Zealand is also noted. A specially appointed committee reported strongly in favour of an extension of the advertising system. The report supplies in detail the proceedings of the association at its annual convention, and the addresses in verbatim of the president, Mr. W. C. Ricardo, Mr. F. W. Peters on the Transportation Problem, Sir Richard McBride (the Premier), Mr. R. Robertson of Vernon, on Co-operation in the Okanagan Valley, Hon. Price Ellison on the Progress of the Fruit-Growing Industry, and Mr. W. E. Scott (Deputy Minister of Agriculture) reviewing the situation as regards the fruit business and calling for the slogan of "Canadian Fruit for Canadian People."

Proceedings of Entomological Society. This 48-page grey-covered book contains reports in detail of the meetings of the British Columbia Entomological Society at Kelowna, B.C., in August, 1914, and at Vancouver, B.C., on January 16th, 1915, the first being the second mid-summer meeting and the latter the fourteenth annual meeting. A deal of information is given on the ravages of many pests and of the most advisable means to be used in their repression. Papers by several expert officials of both the province and the Dominion increase the value of the publication.

MISCELLANEOUS

Agricultural Statistics, 1914, Vol. 49, Part 1, gives the acreage and live stock returns of England and Wales, with summaries for the United Kingdom. It shows a decrease of 15,378 acres under crops and grass compared with 1913, but

the decrease is considerably less than the annual average of the last ten years. Horses had decreased 2,599, the number being 1,399,547 in 1914 as compared with 1,402,146 in 1913. Cattle showed an increase of 161,500, the numbers being 5,877,944 in 1914, and 5,716,944 in 1913. Sheep were 17,259,694 in 1914 against 17,130,286 in 1913, an increase of 129,408; swine were 2,481,481 in 1914 and 2,102,102 in 1913, an increase of 379,379. Wheat showed a slight increase and barley and oats slight decreases.

The Report of the Newfoundland Agricultural Board for the year that ended December 31st, 1914, is a red-covered 72-page publication giving full accounts of the operations of the Agricultural societies of the Island in conjunction with the Agricultural Board. The Board supplies the societies with all kinds of seed and pure-bred breeding stock. It also conducts sales. Instruction is given in the report relative to the checking of pests, the suppression of disease and the care of live stock. There were 9,000 horses, 16,463 cattle, 39,124 sheep, 6,193 pigs on the Island in 1914, the returns in every case showing an increase over those of 1913.

The 388-page report of the Proceedings of the Seventeenth Conference for Education in the South and Twenty-fifth annual meeting of the Southern Educational Association gives a great deal of space to the progress that is being made in agriculture in the Southern States. Short courses and rural school systems are in active operation.

"*Training*" is the title of a publication issued monthly at Toronto by the Ontario Association for the Promotion of Technical Education, that has for its object the encouragement of training for economy and efficiency in Industry, Artistry, Commerce, Agriculture, Homemaking and Practical Processes. The June number quotes the resolution on Technical Education and Scientific Research passed at the recent convention of the Canadian Manufacturers' Association and gives articles on "Organization of Training Co., Limited," "New Kind of Country School," "Child Training by Nature's Methods," "Thrift in the Use of Time," "Training Through Public Libraries," "To Make Teachers National Leaders," and "The Farmers 'on the Job.'"

NOTES

Low temperature and lack of rain have resulted in a hay crop below the average in England.

There are close upon 12,000 credit associations in Siberia, with an aggregate capital of \$150,000,000, which work in conjunction with the still more numerous peasant co-operative societies.

Speaking of the prospect for Canadian eggs in Britain, a prominent provision firm writes:—"It is impossible to speak with any degree of certainty about the future, as it depends entirely upon the supply which may come from Russia. If we have a limited quantity we shall want every egg that Canada can ship us."

During nine months of the year extending from September, 1914, to May, 1915, Canada shipped 697,740 boxes of butter to England against 611,135 boxes in the corresponding period of 1913-14.

The Salmon River Valley (B.C.) Women's Institute held, in July, an annual flower show with prizes for bulbs, sweet peas, roses and perennials. In conjunction with the flower show there was also held a picnic.

At a meeting of the Dundee Markets Committee a letter was read from the Glasgow Corporation urging co-operation in securing the removal of the embargo on Canadian cattle. The movement was heartily endorsed.

The executive of the Canadian National Exhibition, Toronto, has arranged with the Veterinary Inspector General to have all the stables, stalls and sheds thoroughly inspected prior to the receiving of exhibits. The Ontario government will conduct an independent inspection. This extra precaution is being taken because of the occupancy of the buildings and grounds for some months back by the militia.

In Georgia, business men this year have given \$25,000 for boys' corn clubs, \$8,000 for girls' tomato clubs, and the city of Atlanta has given an additional \$10,000 for the annual corn show—a total of \$43,000 voluntarily contributed, which supplements an equal amount from the Federal Government.

Potatoes can be transformed into power. A startling enough thought, yet susceptible of demonstration. A good quality of alcohol can be made from potatoes, and alcohol, when denatured, can be used for fuel for automobile and similar engines. If rightly employed, a potato field could generate the power required to pump the water for its own irrigation; or to run the machinery used in its cultivation, and in hosts of other ways.—*The Maine Farmer*.

The chief timber-producing countries of the world have the following percentage of territory under forest:—Sweden, 52.2; Russia, 43; Germany, 25.9; Austria-Hungary, 29.6; France, 15.6; United States, 33.6; Canada, 22.3. Australia has the smallest area of timber forest in proportion to her total land surface. Some statistics give the forest area at over 100,000,000 acres, or about 5 per cent; but the Victorian Conservator of Forests believes that estimate to be excessive.

At a meeting of the Eastern Ontario Winter Fair Board the dates for the next show, which will be held at Ottawa, were set for January 18th, 19th, 20th and 21st, 1916. The following are the officers: President John Bright, Live Stock Commissioner, Ottawa; vice-president, J. B. Ferguson, Renfrew; general director, R. W. Wade, Chief of the Live Stock Division, Toronto; secretary-treasurer, W. D. Jackson, B.S.A., District Representative, Carp.

In the state of Maine there is in operation a Farmers' Union which is already accomplishing great results for the farmers of the state. The Farmers' Union is a successor to the Grange, which demonstrated in a less degree the value of co-operation. The Farmers' Union has organized a Union Grain Supply Company, a Union Distributing Company and a Shipping Union. For these purposes it has warehouses and grain houses and is establishing Union grocery stores. The following table, taken from "*The Maine Farmer*", shows the progress made by the Union in the three years of its existence:—

	1912	1915
Farmers' Union of Maine	No funds	\$ 7,358.02
Farmers' Union Grain & Supply Company	Nothing	252,000.00
Farmers' Union Distributing Company	Nothing	84,146.50
Penobscot Valley Shipping Union	Nothing	160,000.00
Business of the Local Unions	Nothing	750,000.00
Total		\$1,253,504 52
Warehouses	None	22
Grain houses	None	15
Grocery stores	None	3

At the annual meeting of the United Fruit Companies, Limited, of Nova Scotia, held at the end of June, the following officers were elected:—President, John Donaldson, Port Williams; vice-president, F. W. Bishop, Paradise; secretary, A. E. Adams, Berwick.

The advertising campaign conducted under the auspices of the British Columbia Fruit Growers' Association is having a success beyond expectations. Recently, Apricot Week was advertised in 14 papers in Edmonton, Regina, Lethbridge, Moose Jaw and Medicine Hat, and prizes of British Columbia fruit offered to housewives for the best tried and tested apricot recipe. A feature is being made of preserving fruit without sugar, special prizes not only being offered for samples but also for the best 250 or 300 word stories descriptive of experience in this direction. It is stated that the advertising with that of the Fruit Booklet is inducing hundreds to put up fruits without sugar. It is anticipated that this shall lead to a greatly increased demand for British Columbia fruit, as the trade will agree that preserving is being checked by the high price of sugar.

Large orders for oats have gone from New Zealand to the United States, notwithstanding the published wish of New Zealanders to deal within the Empire. The result has not been satisfactory. The oats were examined by an expert in the presence of the United States consul. The result of the examination is to the effect that the oats are not suitable for seed purposes; that they contain a large quantity of "darnell," also a percentage of weed known in New Zealand as "catch fly," together with a proportion of wild turnip and thistle. The expert also reports that there was a distinct musty smell through the shipments. These samples were taken from the entire shipment. Had quotations arrived from Canada, the orders would have been secured, prices being right. At all events the New Zealand importer is not in favour of importing oats from the United States.—*W. A. Beddo, Trade Commissioner in New Zealand*.

The great drought that had prevailed in Australia for many months was broken in the second week of May by a copious downfall of rain, so much as five inches being recorded in some localities as falling in 48 hours. In less than seven days more rain fell over vast areas of country than during the whole of the previous year. In September or October spring rains will be required to ensure what is expected to prove a bumper harvest.

The Toronto Association for the Cultivation of Vacant Lots, of which Chief Justice Sir William Meredith is president, intends to raise \$2,000 for the prosecution of the work next year. In conjunction with another organization known as The Rotary Club, the association is supervising the tilling of twenty-two acres of vacant land in various parts of Toronto, which has been divided into 200 garden plots. It is estimated that the vegetables grown will be worth \$300 per acre.

In the State of Kentucky a system of Demonstration Public Schools has been placed in operation. In each of ten counties ten of the best schools were selected as demonstration schools. In selecting the schools there was a special attempt to secure schools that might at some future time be consolidation possibilities. The schools selected represent various types of environment. When the work was commenced the ten teachers for each county were brought together for a consideration of the whole plan. Each of the schools planned to take on one or more of the new things which had been proved worth while. These features would be the improvement of the school grounds, improvement of sanitary conditions, introduction of sewing or other industrial work. The one hundred schools were in close touch with their county Superintendents and also with the rural school Supervisor. Reports were made every month and from these a composite report was made and sent to all the teachers. The great function of these schools is to show the people and the teachers how some things can and should be done.

A qualified apiary instructor has been sent on tour by the Ontario Department of Agriculture to show how to examine hives for disease. He actually puts a colony through the treatment for cure. Other manipulations are shown, such as finding the queen, removing bees from supers, operating to prevent swarming, etc., etc. Prominent local beekeepers are asked to take part and assist in the discussion of practical questions. Ladies were especially invited, and were advised to take veils so that they could go right out into the apiary with comfort.

Dr. Paul Reinch, United States Minister to China, recently returned to Madison from the Orient, says that the thing that impresses him most in China is the wonderful ability of the people to make the land that has been cultivated for centuries keep on producing crops. He remarks that agriculturally, the people of China cannot be excelled, and that great sections of the country are as yet practically untouched or undeveloped. He says the popular impression that China is overpopulated is not true, as the Chinese, by extending their agricultural operations over unused lands could largely increase their population.

A model dairy farm for the purposes of demonstrating rotation and the value of alfalfa and corn for ensilage will be one of the features of the Ontario Government dairy exhibit at the Canadian National Exhibition, Toronto. It is intended to have an unusually large and representative showing of Ontario dairy products. The Niagara Fall of milk will again be a feature, the flow showing the production of milk in the province and the proportion into which the total is divided for cheese and butter making, city consumption, etc. There is a large increase in the number of requests for entry forms from the dairy schools of Quebec.

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DEPARTMENT OF AGRICULTURE

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THE WOMAN ON THE FARM

A few years ago the Secretary of the United States Department of Agriculture addressed a set of questions to six hundred representative farm women selected throughout the various states of the Union. The questions were designed, when answered, to indicate the true conditions under which the wives of farmers lived and did their daily duties. The replies in the main revealed a sorry state of affairs, showing that while farmers themselves as a rule enjoyed the advantages of improved machinery, the society of neighbours, the intercourse that comes with public functions, and many other desirable conditions, their long suffering helpmates, in many instances, were compelled to struggle along with few of these advantages. This was the condition found to exist throughout the United States, and it is possible that had the investigation included Canada, the picture would not have been greatly modified. Canadian wives and mothers have doubtless suffered many disabilities, and it is only within the past few years that a genuine effort has been made to relieve the monotony and in many cases the drudgery of their lives. To this end Women's Institutes, Home Makers' Clubs and other organizations have been formed and are working an extraordinary revolution not only on behalf of their own members but on the whole of rural life. In this issue there are brought together an account of the activities of those organizations throughout Canada, from which the workers in the various provinces may learn many things from each other.

To carry on this work during the present year there has been set apart upwards of sixty thousand dollars of public money, about half of which is provided under THE AGRICULTURAL INSTRUCTION ACT, the remainder being voted by the provincial legislatures. THE AGRICULTURAL INSTRUCTION ACT was calculated to provide relief to the rural women, and when introducing the measure in the House of Commons the Minister of Agriculture said, "The particular form such assistance may take . . . might well include the valuable educational work carried on by means of demonstration trains, the training of teachers in nature study, and the invaluable work of domestic science concerned with the women and girls of the community, whose influence will always constitute one of the most potent factors in solving the problems we are considering."

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF CHEMISTRY

NOTES ON FERTILIZER EXPERIMENTS CONDUCTED ON FARMS AND
STATIONS, 1915, AT FREDERICTON, N.B., KENTVILLE, N.S., CHAR-
LOTTETOWN, P.E.I., CAP ROUGE, QUE., AND AGASSIZ, B.C.

BY FRANK T. SHUTT, M.A., DOMINION CHEMIST

1. *Systematic Scheme for Ascertaining the Minimum Fertilizer Requirements of Crops*

THE scheme includes an experiment with some ten mixtures, containing nitrogen, phosphoric acid and potash in varying proportions. These several mixtures are applied in three amounts or rates of application, to ascertain the minimum dressing for the maximum profit. This should give valuable information as to the most desirable formula to be used and the most profitable amounts to apply.

Plots for nitrogen, phosphoric acid and potash, applied singly and in combination of twos, *e.g.*, nitrogen and phosphoric acid, nitrogen and potash, potash and phosphoric acid, are included in the series, as well as a

number to test the respective merits of different forms of nitrogenous and phosphatic fertilizers.

The plans for this work comprise two experiments, which are designated as A and B.

Observations are to be made throughout a three-year rotation, potatoes, first year; grain seeded to clover and timothy, second year; and hay, third year.

EXPERIMENT A

To ascertain the most desirable formula and the amount of fertilizer (rate of application) giving the largest profit.

FERTILIZER FORMULÆ

PLOT	Nitrogen per cent	Phosphoric Acid per cent	Potash per cent
I.	20	0	0 (sulphate of ammonia)
II.	5	11	0
III.	0	16	0 (acid phosphate)
IV.	0	11 5	6
V.	0	0	50 (sulphate of potash)
VI.	10	0	12
VII.	6	4 5	2 4
VIII.	4	9	2 4
IX.	2	13.7	2.4
X.	2	9	4 8
XI.	3	6 5	10 5
XII.	7	8 7	9 6
XIII.	5	8 6	4 5
XIV.	3	9	3 6
XV.	4	8 4	6 4
XVI.	4	9	5
XVII.	4	9	10
XVIII.	2 5	11 5	3

Formula Nos. I to VI are applied only at one rate per acre, while Nos. VII to XVIII, are applied at three rates per acre.

The fertilizer mixture XVII B (formula 4:9:10) is being used with manure to ascertain the supplemental value of fertilizer as follows:

Plot A.	Fertilizer,	750 lb. manure,	0 in 2nd and 3rd years.
" B.	"	750 "	175 lb. fertilizer 3rd year.
" C.	"	375 "	0 " " "
" D.	"	375 "	175 " " "
" E.	No fertilizer,	750 "	
" F.	"	375 "	
" G.	Check,	No fertilizer,	No manure.
" H.	"	"	"
" I.	"	"	"

EXPERIMENT B

The series contains fifteen plots and is designed to ascertain the most profitable and cheapest forms of nitrogen, phosphoric acid and potash to employ.

In this experiment we compare Nitrate of Soda with Sulphate of Ammonia; and Superphosphate with Basic Slag and Bone Meal. The scheme is as follows:

FORMS OF NITROGEN AND PHOSPHORIC ACID. AMOUNTS PER ACRE

	Nitrate of Soda	Sulphate of Ammonia	Acid Phosphate	Basic Slag	Bone	
I. A	133		200	200		150
B	100		200	200		150
C	66		200	200		150
II. A		100	200	200		150
B		75	200	200		150
C		50	200	200		150
III. A	100	75	400			150
B	100	75	300			150
C	100	75	200			150
IV. A	100	75		400		150
B	100	75		300		150
C	100	75		200		150
V. A	100	75			350	150
B	100	75			263	150
C	100	75			175	150

SEAWEED FERTILIZER INVESTIGATION

2. The following experiments with a view of ascertaining the fertilizing value of dried ground seaweed are being conducted at—Ottawa, Ont., Kentville, N. S., Fredericton, N. B., Nappan, N. S. and Charlottetown, P.E.I.

The crops under experiment are: corn, potatoes, turnips, and oats and peas.

SCHEME:	Per Acre
a. Dried ground seaweed	1,000 lb.
b. Seaweed	1,000 "
Superphosphate	400 "
c. Superphosphate	400 "
d. Muriate of potash	200 "
e. Superphosphate	400 "
Muriate of potash	200 "
f. Nitrate of soda	125 "
Muriate of potash	200 "
g. Nitrate of soda	125 "
Muriate of potash	200 "
Superphosphate	400 "

The plots are 1-40 acre.

SCHEME FOR EXPERIMENTAL WORK WITH DOG-FISH SCRAP

3. Experiments to ascertain the fertilizing value of Dog-fish Scrap are being conducted at Fredericton, N.B., and Kentville, N.S., as follows:

On each plot, with the exception of G., H. and I (see scheme following) the equivalent of 500 lb. of a 4:8:10 fertilizer is applied per acre, that is, Nitrogen 20 lb., Phosphoric acid 40 lb., Potash 50 lb., per acre. Plots G and H receive applications of the fertilizer at the rate of 750 lb. per acre. Plot I the fertilizer is applied at the rate of 1,000 lb. per acre. Each plot is in duplicate; the plots are 1-10 acre each.

The rotation is, first year, potatoes, second year, grain, third year, clover. In the first year the application is at the rate given in the tabulated scheme. In the second and third years the application is at the rate of one-fourth the weight of each mixture per acre, applied on one half of each plot, the other half of the plot being left unfertilized. This will

allow the opportunity of noting the value of continued yearly applications.

SCHEME OF PLOTS

A. Check plot	No fertilizer
B. Am. sulphate	50 lb
Nitrate of soda	62 1/2 "
Acid phosphate	266 1/2 "
Muriate of potash	100 "
C. Am. sulphate	50 "
Nitrate of soda	62 1/2 "
Basic slag	266 1/2 "
Muriate of potash	100 "
D. Fish scrap	215 "
Acid phosphate	233 1/2 "
Muriate of potash	100 "
E. Fish scrap	215 "
Basic slag	233 1/2 "
Muriate of potash	100 "
F. Am. sulphate	25 "
Nitrate of soda	31 "
Fish scrap	108 "
Basic slag	116 "
Acid phosphate	117 "
Muriate of potash	100 "
G. Am. sulphate	75 "
Nitrate of soda	94 "
Basic slag	400 "
Muriate of potash	150 "
H. Fish scrap	323 "
Basic slag	350 "
Muriate of potash	150 "
I. Am. sulphate	50 "
Nitrate of soda	62 "
Fish scrap	216 "
Basic slag	232 "
Acid phosphate	234 "
Muriate of potash	200 "

ENRICHMENT OF SOILS THROUGH THE GROWTH OF LEGUMES C.E.F. OTTAWA

4. To ascertain how far soil fertility may be maintained and increased by the growth of legumes, without manure or fertilizer.

The series consists of 5 plots of one-fifth of an acre each, as follows:

FIRST YEAR

No. 1.	Barley and timothy.
" 2.	" " alfalfa.
" 3.	" " alsike.
" 4.	" " common red clover.
" 5.	" " alone.

Yield of barley, seed and straw, obtained.

SECOND YEAR

Plots 1 to 4 inclusive, are devoted to seed production, weight of fodder being noted. Plot 5, will be sown with barley alone.

THIRD YEAR

The series of 5 plots are divided and sown with (a) roots and (b) corn.

THE DIVISION OF ANIMAL HUSBANDRY

THE MARKING OF LIVE STOCK

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

THE importance of marking individual animals in the herd and flock is evident. Animals which are on pasture, particularly on the Crown Lands, where the owners do not see them at least once per day, are apt to be mixed with the neighbours' cattle and in any event so change in their appearance during the few months on pasture that it often leads to confusion. Numerous cases of theft of unmarked animals have been brought to our attention in recent months. This would have been eliminated had the animals been properly marked.

The writer knows from personal experience that a comparatively large percentage of Canadian farmers take so little interest in their live stock that they cannot readily tell the individuals and the breeding of their herds, this even applying to many farmers who have pure-bred cattle. Although proper marking will not correct this lack of interest, with the accompanying lack of intelligent work, nevertheless it will guarantee the knowledge of the breeding of the various animals and the possibility of retaining the heifers from only the best producing stock for the up-building of the future herds.

METHODS OF MARKING

There are four methods, more or less commonly practised, of marking live stock, namely, branding on the body, nicking of the ears, use of ear tags, and use of the tattoo in the ear.

Branding on the body is still practised in many districts and is very satisfactory. However, for show purposes the brand is more or less unsightly and with valuable breeding animals which might be sold to other individuals or companies this

large brand which it is impossible to obliterate is very unsatisfactory.

The nicking or slitting of the ears of individuals has been practised from time to time with practically all classes of live stock to designate both the owner and the breeding of the individual. This, too, has its objection, as it is unsightly in valuable breeding stock and is not sufficiently complete in its marking.

The use of the ear tag is most commonly practised where mixed farming is commonly carried on. The ear tag may have stamped thereon the name of the owner and the individual herd name or number of the animal and the registration number in the case of pure-bred animals. This is very complete so far as information is concerned. The great trouble with the ear tag is that it may be lost or in the case of theft may be easily removed and replaced by another. Aside from this, of the various types of ear tags used, the writer has not discovered one which may not be torn out, leaving a very badly mutilated ear. In the hands of careless, indifferent users the ear tag may disfigure the ear by not being properly placed therein, by using the wrong size of tag, or by allowing festers to form around a tag which is too small or which has not been treated in a cleanly manner. Hence the fact that many of our largest breeders of live stock are looking for some better system of marking cattle and other classes of stock.

THE EAR TATTOO

The tattooing of the ears of animals has been tried for several years in various countries, and with greater or less success. It consists in punching numerous small holes in the skin in the inner part of the ear

and rubbing into the perforations a special tattoo oil which is indelible. The needles which are used to make these perforations are set in small lead blocks in the form of letters or numbers as required, and these lead blocks slip into the jaws of a specially made punch. The marker, that is, the punch, with three letters or figures is valued at \$2 and extra letters or figures are valued at from 30 to 35 cents each. The black tattoo oil per bottle, sufficient to mark 500 ears, is valued at 50 cents and the red oil at 60 cents per bottle. Hence an outfit sufficient to mark the name of the owner and designate the herd number of the individual would cost about \$4 for 500 head and for animals over 500 head only one-tenth of a cent per head for tattoo oil. Comparing this with the average price for labels, it is seen that it is really much more economical. As a rule the charges for ear tags in lots of 500, with name and number stamped thereon, are \$7 for the small size for sheep and hogs, \$10 for the average size for cattle, and \$12 for the extra large cattle size.

METHOD OF TATTOOING

The method which has been adopted for the tattooing of cattle, sheep, and swine on the Central Experimental Farm is as follows: The part of the ear where it is desired to make the necessary marks is smeared lightly with the tattoo oil. The numbers are then slipped into the jaws of the marker and the ear is punched where smeared. The oil is then rubbed well into the punctures with the thumb or fore-finger. It takes three to five days for the ear to heal and then the brand will show out clear and distinct in the ear. On white, pink, or yellow skin the black oil is most satisfactory, showing out jet black, while on brown or black skin the black oil does not show out so distinctly, but is discernible as a blue line. The red tattoo oil on the brown and black ears has given slightly better satisfaction than the black oil.

After using this marker for over a year on practically all classes and ages of stock, our success might be summarized as follows:—

In tattooing very young calves, pigs, or lambs, the size of the letters and figures increases with the size of the ear and at two years of age the letters and figures are more than double the original size. It is often advisable to re-tattoo over the old figures at that age. This objection of course applies equally to the use of tags, as larger tags must be substituted for small tags for the best success; hence the tattooing is really superior in this respect.

Letters and figures tattooed in different coloured ears of various classes of stock have remained very clear and easily distinguished for over a year and show no signs of becoming obliterated.

In two instances, probably due to lack of cleanliness, tiny warts appeared over each of the punctures and instead of a tattooed black or blue line there are the letters and figures outlined in tiny warts. This trouble includes such a very small percentage that they may be considered exceptional instances.

The main point in the process of tattooing is to be sure that the tattoo needles are settled well into the ear and the tattoo oil rubbed in thoroughly. In a coarse ear of open texture, often found in cattle and commonly found in swine, special precaution must be taken in this respect, else the letters will not be discernible in the course of two or three months.

METHOD OF LETTERING

A simple method of lettering which was adopted is as follows: In the right ear the letters "C E F" were stamped to designate the ownership of the animal. In the left ear the herd number was stamped. Starting with the year 1910 the letter "A" was used to designate the year, after which the herd number was added. For exam-

ple, "E47" in the ear of a Holstein heifer means that in the herd record books her number is 47 and that she was born in the year 1914. This

method is very simple and, with variations to suit the needs of private individuals, may be very satisfactorily used.

THE DIVISION OF BOTANY

THE WILTING OF TOMATOES AND POTATOES

BY W. A. MCCUBBIN, ASSISTANT IN CHARGE OF ST. CATHARINES FIELD LABORATORY

THE abnormally wet weather, which prevailed throughout the Niagara peninsula, as well as in other parts of Ontario, during the month of August, was the cause of a large amount of injury to garden and field crops, but particularly to potatoes, tomatoes and beans. Other crops have suffered to a lesser extent and even weeds are affected.

In the case of beans, it is noticed that those in low places, or in furrows where water lies for some time, stop growing and their lower leaves turn yellow and drop off. Potatoes and tomatoes in similar situations have their leaves burned and blackened, and these finally fall, leaving bare stalks. In milder cases, there has occurred a pronounced wilting of the leaves, especially in tomatoes in sodden soils. These symptoms, which have been the subject of inquiry many times recently, are really cases of drought. It seems strange to use this term where the land in which plants are growing is reeking with moisture, but it is an actual fact that such plants are suffering from lack of water. It is found that their roots are more or less rotten, and, in many cases, the unpleasant odour which accompanies decomposing vegetable material is plainly evident. This rotting of the

roots is probably due to the enormous multiplication in the warm wet earth of soil organisms which are ordinarily few and harmless, but which, when numerous, are able to bring about a rotting of the unhealthy root tissue. An examination of these water-logged plants shows a darkening of the sap-conducting tissue for some distance above the ground, and under the microscope, the sap tubes are found to be clogged, undoubtedly because of the toxic substances ascending from the rotten root below. Very little water can pass upwards through these clogged tubes, so that there arises this curious condition of affairs—the soil is saturated with water and the tops die from drought.

The percentage of damage arising to potatoes and tomatoes cannot yet be estimated. If, as now seems likely, drier conditions prevail for September, those plants which are not too seriously injured will recover. In tomatoes, however, the crop is already much later than usual, and this set-back is bound to tell on the crop from the affected vines. It is very fortunate that the potatoes are still quite free from Late Blight, which, by reason of the wet weather, might have become epidemic among the tops, and, thereafter, brought about a widespread rot of the tubers in the ground.

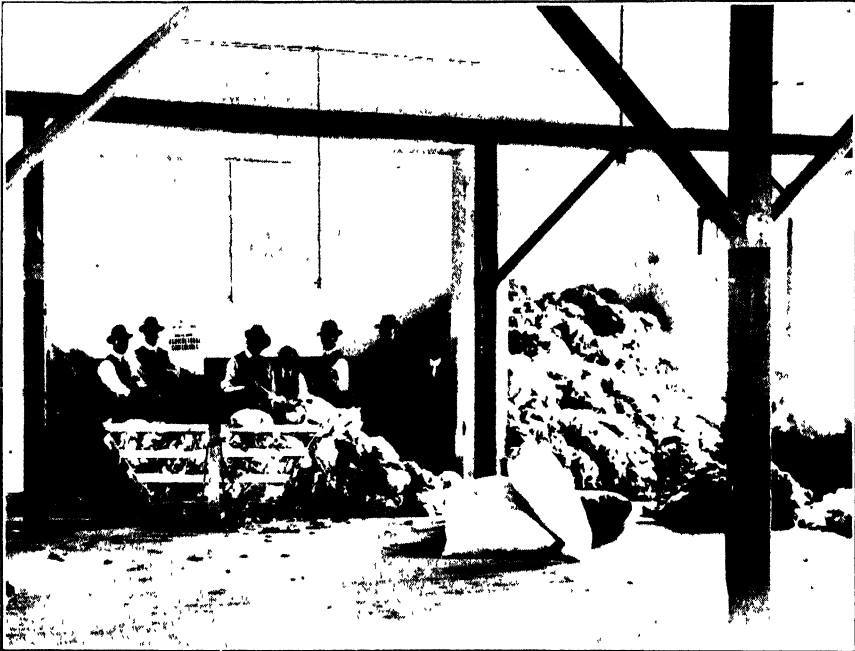
THE LIVE STOCK BRANCH

PRELIMINARY STATEMENT WITH RESPECT TO ASSISTANCE EXTENDED TO WOOL GROWERS' ASSOCIATIONS IN GRADING AND CLASSIFYING WOOL FOR MARKET

BY T. REG. ARKELL, B.S.A., B.Sc.

GRADING operations were pursued by the Live Stock Branch this summer to cover a greatly increased area and to include much larger quantities of wool than in previous

tion of wool for a cooperative society leads to a friendly rivalry amongst members. Each member endeavors to prepare a product which will be included in a grade higher than that of his neighbour. This has a most



WOOL GRADING DEMONSTRATION, AGRICULTURAL HALL, SUMMERSIDE, P.E.I.,
JUNE 24TH, 1915

years. Wool Growers' Associations were organized and applications received from every province except British Columbia, from which preliminary steps have already been taken to form an organisation to receive assistance from the branch in this respect this year. Classifica-

wholesome effect in tending to create an improvement in the entire clip of the association. In fact, this feature is already most apparent with those associations which were organised last year and had their wool graded.

Results, as outlined in the tabulated reports, show not only the benefits to

be gained through cooperative effort in marketing, but also the greater financial returns derived from the presentation to the trade of a clean, classified article. Grading was pursued under the direction of the wool experts of the Branch and the wool was disposed of through avenues devised and controlled solely by members of the different societies.

All the work of grading is not yet completed. Therefore, full returns cannot be reported at this time. In fact, this report excludes 200,000 pounds of wool already graded, all data pertaining thereto being not yet compiled, and 50,000 pounds being graded at the present time. A further statement will be issued shortly, when a more detailed explanation of the nature of the work will be made.

PARTIAL GRADING STATEMENT

EASTERN DOMESTIC

GRADE	Weight	Approximate Shrinkage
	Lb.	Per Cent
Fine medium combing	1,809 ¹ / ₂	44
Medium combing	7,958 ¹ / ₄	44
Low medium combing	5,761	35 5
Coarse combing	6,061 ¹ / ₂	49 5
Lustre combing	14,806 ¹ / ₄	33.
Fine medium cloth	200 ¹ / ₂	45.
Medium cloth	214 ¹ / ₂	38
Rejections	870 ¹ / ₂	40
Gray and black	606 ¹ / ₄	34
Locks and pieces	51 ¹ / ₂	60
Tags	623	60
Washed	202 ³ / ₄	10.

WESTERN DOMESTIC

GRADE	Weight	Approximate Shrinkage
	Lb.	Per Cent
Fine combing	3,246	59 5
Fine medium combing	13,225	51.3
Medium combing	68,480	49 1
Low Medium combing	44,896	40 9
Low medium combing (washed)	131	24
Coarse combing	6,565	36 4
Lustre combing	6,589	44 5
Lustre combing (washed)	554	22.
Fine cloth	3,015	68.
Fine medium cloth	6,257	60 6
Medium cloth	13,214	53.7
Low medium cloth	2,468	49 5
Rejections	3,094	56.6
Gray and black	1,664	35.
Locks and pieces	645	60.
Tags	1,341	70.
Pulled	190	43.

RANGE

GRADE	Weight	Approximate Shrinkage
	Lb.	Per Cent
Medium staple	101	38.
Low staple	908	36 5
Fine cloth	7,701	59.
Medium cloth	5,153	49.
Gray and black	22	35.
Locks and pieces	60	60.

NAME OF ASSOCIATION	Amount of Wool	Average Price per Pound
	Lb.	Cents
*Prince Edward Island	5,496 ¹ / ₂	32 50
Antigonish, N.S.	12,271	33
*Sussex and Studholme, N.E.	1,103 ³ / ₄	35
Manitoulin, Ont	20,295	26
Manitoba	64,739	26 8
Elkhorn, Man	10,635	26 8
*Calgary	11,665	27 77
Lacombe	24,134	27
Vermilion	29,642	27
Pincher Creel	35,916	25.
*Edmonton	12,788	27.

*Partial reports only. Statements from provinces and districts not represented in the foregoing but where grading operations were pursued by the Branch will be given at a later date

STATEMENT OF RAMS AND BOARS TAKEN OVER FROM THE ONTARIO DEPARTMENT OF AGRICULTURE UNDER THE POLICY OF LOANING PURE-BRED SIRES TO FARMERS' SOCIETIES

BY T. REG. ARKELL, B.S.A., B.Sc.

PURE-BRED sires which had previously been loaned to live stock improvement associations by the Ontario Department of Agriculture before this policy was inaugurated by the Dominion Government were this summer by mutual consent purchased by the Federal Live Stock Branch, which will now assume control of these associations. In so far as rams and boars are concerned, four Berkshire boars and sixteen rams (thirteen Shropshires and three Leicesters) were involved. These are distributed among the following associations:

Iron Bridge Association, secretary, J. C. Gardiner, Iron Bridge	1 Berkshire boar
Ryerson Association, secretary, J. F. Nelles, Doe Lake	1 Berkshire boar
Bleazard Valley Association, secretary, Teles Bonin, Bleazard Valley	1 Berkshire boar
	3 Shropshire rams
Hanmer-Capreol Association, secretary, P. Taillon, Hanmer	1 Berkshire boar
	1 Shropshire ram
Powassan Association, W. G. Oldfield, Powassan	5 Shropshire rams
Hicks Association, secretary, A. Brechin, Box 41, Bruce Mines	4 Shropshire rams
Strong Association, C. F. Vanwicklin, Sundridge	3 Leicester rams

THE WOOL EXHIBIT

BY T. REG. ARKELL, B.S.A., B.Sc.

THE Wool Exhibit of the Sheep and Goat Division has again been presented at the Canadian National Exhibition, Toronto, and will be on hand at many of the eastern fairs this fall. Last year it was displayed at the fairs in Western Canada. It has been greatly enlarged and many new features have been added. In fact, it fills double the space it occupied last year.

The object of the exhibit is to explain fully the various classifications and grades in this and other countries and to show how wool may be handled in such a way as to secure the best advantages to both the producer and manufacturer. In order to command the highest market prices, wools should be presented in a carefully rolled and packed condition and should contain as little foreign matter as possible. Carelessness in the preparation of wool soon results in an injury to its reputation upon the market, which may take years of perfect handling to remedy. The aim of every sheep raiser should be to produce as low a shrinking wool as is compatible with the breed type, that is, to keep it as free as possible from all extraneous material as straw, burrs, sand and other harmful things of this nature.

These features form an important part of the exhibit. It contains samples of wool in both the greasy and scoured condition, showing the injurious effects of using insoluble paints for marking purposes. Ordinary paint will not scour out and consequently must be cut from the wool, which shortens the staple, creates a loss of wool and wastes the time of the sorter in the mill. Fleeces are also exhibited tied with binder (sisal) twine showing how the sisal fibre may become incorporated in the wool, pass through the combing process and, since it does not take the dye, appear as a pronounced blemish

in the cloth, which, if the defect covers a wide area, may mean a serious loss to the manufacturer. The injurious effects of shearing wool while wet, or permitting it to become damp while in storage, are also shown.

Most of the important classes of Australian, New Zealand, South American and South African wools are shown. Of foreign and domestic wools used in the manufacture of carpets there is a very complete collection. Four large cases contain representative fleeces of the most prominent breeds of Canadian sheep, and smaller samples of each are displayed in such a manner as to give a clear idea of their character and staple. This is supplemented by a comprehensive display of English wools covering virtually every grade in that country. A study of these samples will help to give beginners an opportunity to compare the wool of the different breeds, and thus become acquainted with the average weight of fleece and quality of wool obtained from each. Comparison is also made of the British, American and Canadian methods of classification, but especial emphasis is placed upon the domestic product. One large case contains fleeces of Canadian wool representing the different classes as they are graded for the market.

Processes of woollen and worsted manufacture are illustrated by samples representing the intermediate products from the wool in the grease to the finished cloth. This serves to give the public an idea of the types of wool entering into the different classes of fabrics. Although the living specimens of sheep are not shown, a number of enlarged photographs of typical representatives of the different breeds as well as entire flocks are included in the exhibit.

THE HEALTH OF ANIMALS BRANCH

THE CONTAGIOUS DISEASES ACT AMENDMENT

THE Order under "The Animal Contagious Diseases Act," of date the 9th day of May, 1915, as amended by orders of date the 15th of May, 12th of June and 22nd of July, 1915, is hereby further amended as follows:—

"Hay or straw used in packing merchandise from the United States may be admitted, provided the shipment is accompanied by the affidavit of the shipper, or of a Bureau of Animal Industry Inspector, stating that the said hay or straw was harvested and stored in an area that has not been under federal quarantine for foot and mouth disease, or else that the said hay or straw has been fumigated with formaldehyde, as required by the Bureau of Animal Industry.

"This regulation does not apply to shipments originating in any of the states now removed from foot and mouth regulations.

"Transit of live poultry through Canada from one United States point to another is permitted in car lots when the shipment is accompanied by the affidavit of the owner or shipper that the poultry are the product of a state not under federal quarantine. Cars to pass the inspection of officers at the boundary as to sanitary condition and freedom from hay, straw or chaff."

Dated at Ottawa, this fifth day of August, 1915.

(Sgd.) GEO F. O'HALLORAN,
Deputy Minister of Agriculture.

DRESSED HOGS IMPORTATION

THE Order under "The Animal Contagious Diseases Act," of date the 9th of May, 1915, as amended by Orders of date the 15th of May, 12th of June, 22nd of July and 5th of August, 1915, is hereby further amended as follows:—

"The importation of dressed hogs from the United States of America is permitted under the following conditions:—

"Hogs must have been killed and dressed in an establishment under federal inspection.

"Carcasses must have been singed and feet, head and viscera removed, including kidneys, tenderloins and leaf lard.

"Car lots only will be admitted.

"Cars are to be sealed by a Bureau of Animal Industry Inspector, con-

signed to a Canadian establishment under inspection and received there with unbroken seal. Seals are to be broken by the Inspector of the Health of Animals Branch stationed at the establishment.

"Importers of dressed hogs under this amendment will be required to export every portion of the hogs so imported, with the exception of such small trimmings as are rendered, or lean trimmings, which must be cooked before being offered for sale.

"After unloading, the cars are to be cleansed and disinfected to the satisfaction of the inspector at the expense of the importer."

Dated at Ottawa, this twentieth day of August, 1915.

{(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

IMPORTATIONS FROM MINNESOTA PROHIBITED

UNDER the provisions of "The Animal Contagious Diseases Act," for a period of three months from this date, the importation or introduction into Canada, of animals, or of the flesh, hides, wool, hoofs, horns or other parts of animals, or of hay, straw, fodder or manure from the State of Minnesota, United

States of America, is hereby prohibited, with the special reservations provided under the Order of May 9th, 1915.

Dated at Ottawa, this 13th day of August, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

THE ENTOMOLOGICAL BRANCH

THE HOUSE SPARROW

BY DR. C. GORDON HEWITT, D.Sc., DOMINION ENTOMOLOGIST, OTTAWA

IT is to be regretted that this bird commonly called the English sparrow should not receive the popular name in this country by which it is known in the country from which it was introduced, which name I have given it in this article, as its deplorable habits make it undeserving of a name to which it has really no title as it is as common in continental Europe as in England.

The question of the economic status of the house sparrow and what our attitude should be towards it frequently agitates the minds of those who are endeavouring to encourage and protect our native birds, a movement which, most fortunately for the country, is gradually making headway. Accordingly it is the object of this article to bring together in a few words the information we have concerning the habits of this bird and the opinions expressed are based on such facts and on my own observations made in England and Canada.

The case for the prosecution is as follows: There are many characteristics of the sparrow that render it noxious as a bird. Its general characteristics are an aggressive nature, and destructive and unsightly habits. Its aggressive nature is perhaps its

worst feature. As a result of this characteristic and of its numerical abundance it has reduced in many parts of the country the numbers of some of our most useful and pleasing native birds such as purple martins, tree swallows, barn swallows, blue-birds and wrens, which birds have somewhat similar nesting habits. It appropriates the nesting places of these birds, their eggs and young are destroyed and in their place we have a bird with no song but with a quarrelsome disposition and an appropriately noisy vocabulary. In the place of native birds of pleasing song and plumage and of habits that are almost entirely insectivorous we have a bird which is destructive both in the small home gardens, where it destroys buds and flowers, uproots the seedling peas and eats off the tender young seedling vegetables, and in the fields outside the towns and cities where, when the grain is ripening, the young birds in such great numbers as indicate the unusual procreative powers of this species, assist their parents and other relatives in destroying more ears than are necessary to satisfy even their enormous appetites. A number of reports have reached the department concerning the great destruction of uncut and cut grain.

An examination of 522 house sparrow stomachs made by the Biological Survey of the United States Department of Agriculture resulted as follows: 47 contained noxious insects, 50 contained beneficial insects and 31 contained insects of little or no economic importance. The report of the investigation shows conclusively that "aside from the destruction of weed seed, there is very little to be said in the sparrow's favour."

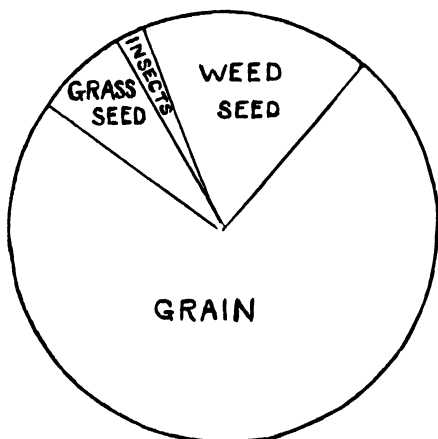


DIAGRAM SHOWING PROPORTION OF FOOD OF HOUSE SPARROW
(From Judd, U. S. Department of Agriculture)

For the defence it may be said that it consumes weed seed and I have sometimes observed them so feeding, but it must be admitted that it was at a time of year when there was little else for them. Our own native species of sparrows are much more efficient and habitual destroyers of weed seeds than this undesirable alien. Another fact in its favour is that during the nesting period the house sparrow destroys insects upon which the young are largely fed. In England, Collinge recently showed that in a single day, one hundred nestling sparrows require nearly 2,000 insects for food in fruit growing districts and about one-third that quantity in suburban districts. The insect-eating habit impresses one less in this country in view of the fact that the house sparrow has the habit of driving away more valuable native in-

sectivorous birds that have not its evil habits at other times of the year.

The evidence is overwhelmingly against this immigrant. In England, the necessity of its destruction is indicated by the number of "sparrow clubs" that are in existence. This hostile attitude is almost unanimously supported, although its title of "avian rat" is held by a few to be not fully justified; nevertheless, the best that has been said in its favour is that its economic status is doubtful. But in North America there is in my opinion no doubt about its economic status. *It is a pest of the first order and should be treated as such*, however much we may be moved by our natural feelings to sympathise with its fate during our severe winters.

It is an example of the danger of introducing, without the most careful consideration, an animal into a new environment. We have many similar instances, one of the most notable of which is the introduction of the skylark into Australia; in England its economic status never demands an inquiry, but it has become a serious pest in Australia following its introduction to a new environment.

When it is possible steps should be taken to prevent the increase of the house sparrow and to reduce its numbers. The former object can be best obtained by the destruction of the nests at intervals of ten or twelve days during the nesting season; this is the most satisfactory method of control. The destruction of the birds themselves can be accomplished by netting or trapping in their roosting places after dark; by shooting the assembled flocks with No. 10 shot; and by poisoning with wheat coated with strichnia sulphate. All efforts to control sparrows must be systematically carried out and continued to prove of ultimate success. At the same time every effort should be made by protection and by the provision of nest boxes to encourage an increase in the numbers of useful native birds.

NOTES

The Dominion Entomologist is inspecting the work of the branch and the entomological laboratories in Western Canada.

Mr. J. M. Swaine, Assistant Entomologist for Forest Insects, is in Western Canada investigating bark beetle injuries to the forests in the Peace River district and northern British Columbia and studying forest insect conditions in these regions.

Mr. E. H. Strickland has been making a survey of the insects affecting field and garden crops in the Peace River region, where considerable agricultural development has been undertaken during the last few years. It is of great importance to determine the insects that occur and

to ascertain the conditions, from an entomological point of view, existing in such regions where agricultural development is taking place in order to be in a position to advise farmers concerning preventive and control measures. For a similar reason Mr. Germain Beaulieu is visiting Northern Ontario after travelling through parts of the province of Quebec during which journey, in addition to making entomological studies, addresses were given to the farmers in a number of localities on the control of the insect pests occurring in those places.

Entomological laboratories have been built during the summer at Treesbank, Man., and Lethbridge, Alta., and the erection of laboratories at Annapolis, N.S., and Fredericton, N.B., will be completed during the present month.

THE FRUIT BRANCH

A TOUR OF THE WESTERN PROVINCES

THE Fruit Commissioner, Mr. D. Johnson, during the month of July visited the various markets of the prairie provinces for the purpose of making himself more familiar with the conditions under which fruit is distributed there. The first market of importance visited was Winnipeg, where the Commissioner had an opportunity of investigating the arrival and sale of raspberries and strawberries. The wholesale houses of Winnipeg had arranged among themselves to pool their cars of fruit, the greater part of which was received from the northwestern states. The demand for berries was better than had been anticipated earlier in the season, as it was thought that, owing to the war conditions and the high price of sugar, the amount of

fruit consumed would be curtailed. The demand for tender fruit, however, not only in Winnipeg but in other markets in the west, was much larger than last year, and on the whole we have reason to believe that the wholesalers made prices fully 50 per cent higher than were obtained last season.

The same conditions existed in Saskatoon, Lethbridge, Edmonton and Calgary, although the province of Alberta was somewhat more seriously affected by the money stringency which exists in the west at present. They have a prospect, however, of an enormous grain crop, and if this crop is harvested without injury, the demand for fruit will be greatly increased.

A MARKETING CONFERENCE

In Calgary the commissioner attended a meeting which was called by the Calgary board of trade for the purpose of discussing the price of fruit. The convention was a most interesting one and lasted for three days, the delegates present representing the Manitoba, Saskatchewan and Alberta Grain Growers' Associations, the British Columbia Fruit Growers' Association, the Consumers' Leagues, the wholesale and retail merchants of Alberta, boards of trade, and railway and government officials. It was brought out at this meeting that last year the fruit grower in British Columbia received an average of 15c. (net) for his apples on the tree, while the consumer paid from \$1.50 to \$2.00 per box for the same fruit, the difference going to the transportation companies and the middlemen. It was the unanimous desire of the convention that the federal government should appoint a commission to thoroughly investigate the marketing of fruit and to devise some different methods than now existed of distributing same.

BRITISH COLUMBIA

In company with Chief Fruit Inspector Clarke, the commissioner visited the producing centres of British Columbia, and made an effort to meet the growers as much as possible on their own ranches, which gave him an opportunity of securing a deal of first-hand information as to the cost of production and marketing in British Columbia. The Kootenay district was first visited, many large and beautiful orchards being situated on the Kootenay lakes. Many of the growers here, however, were somewhat discouraged owing to the low prices secured last year and the unsatisfactory condition of the orchards at the present time. Scab and aphid have developed to an alarming extent and many orchards will have little or no No. 1 fruit for sale. Up to the

present this district has been fairly free from such pests.

The Arrow lakes were next visited, and, although fruit growing is not very much developed in this district, some excellent orchards showed the possibilities for growing fruit there.

The Okanagan lakes, however, constitute the great fruit producing district of British Columbia, and many thousands of acres of beautiful orchards are to be seen on the shores of these wonderful lakes. This district will probably have a tonnage equal to last year, but in some parts the quality will seriously interfere with the marketing, the scab and aphid affecting fully 50 per cent in the northern part, while the south or dry belt is comparatively free. The fruit of this valley is largely marketed by three marketing concerns, each of which was busy marketing the cherries and making preparations for the larger fruits.

The British Columbia fruit growers have made a special effort this year in the advertising of their fruits on the prairie markets as well as in their own province, and this campaign has resulted in practically no imported fruit being consumed. In the city of Vancouver alone it was estimated that \$80,000 worth of American small fruits would have been marketed had it not been for the vigorous advertising efforts carried on by the British Columbia fruit growers. They are making arrangements for an even more vigorous campaign for the marketing of larger fruits and are confident of good results.

On Vancouver Island fruit growing has not been developed to the same extent as on the mainland, but at Gordon Head a special effort has been put forth to promote this industry, with very good results.

WASHINGTON STATE

After leaving British Columbia, the commissioner spent a day or two in the Washington fruit districts, as the

fruit produced there comes in direct competition with the Canadian boxed apples. Mr. Johnson found that the apple crop in this district was about 60 per cent of last year, and in Oregon and Northern California the crop was very light. This district has, perhaps, been more advertised than any other apple-producing district in the United States, with the result that 650,000 acres of orchard have been planted. These orchards are now coming into bearing, and, while last year they produced some 15,000 cars of apples, they predict that in ten years' time, at the rate of increased production, they will produce 50,000 cars. Many of the orchardists are growing discouraged, as they were led to believe that a fortune was assured them in the business, but are now beginning to fear over-production. Some are seriously considering the removal of their orchards in order to plant other crops, such as alfalfa, or wheat, which grow so wonderfully well there.

THE "PANAMA PACIFIC"

The next point visited was San Francisco and the commissioner notes that although he had heard from tourists of the beauty and magnitude of the Canadian exhibit, he was quite unprepared for the sight which presented itself on entering the Canadian building. The displays were so arranged as to give the impression of looking over broad fields of grain, great hills of forest full of game, and beautiful orchards laden with fruit. It was freely stated by all visitors that the Canadian exhibit far surpassed anything else on the grounds. Ex-President Roosevelt, on visiting the Canadian building, wrote in the guest book: "By far the finest exhibit on the grounds"; and the German Ambassador also wrote: "Sorry to say the finest exhibit on the grounds."

THE ORANGE GROVES

After leaving San Francisco, Mr. Johnson visited the orange planta-

tions in Southern California and, while these orchards are well kept and present a beautiful appearance, yet the financial results last year were far from satisfactory. The average orange plantation is not a financial success and if many of the growers could be relieved of their property, they would be glad to take up other lines of agriculture in the east. The orange crop this year is light, being about one-half of last season. This should have a stimulating effect upon the apple market, as oranges are one of the greatest competitors that Canadian apples have to meet.

LARGE DISTRIBUTING CENTRES

On his return trip Mr. Johnson visited Kansas City and Chicago, two of the largest distributing markets on the American continent. The general condition of trade was not as good with them as a year ago and while they looked for fair prices for all fruits, yet the demand was not as good as on the Canadian markets. One reason for this, no doubt, is the unsatisfactory methods of packing employed by the greater part of the American fruit growers. While the western states are probably the best fruit packers in the world, the central states as well as many of the eastern ones, have a great deal to learn in this respect and as there is no federal legislation, such as our Canadian Fruit Marks Act (Inspection and Sale Act, Part IX), to control their methods of packing and grading, all kinds of grade marks, such as "Fancy," "Extra Fancy," "Special," etc., were apparent, which meant nothing to the purchaser as there was no guarantee that the fruit was packed in accordance with such marks. In many cases it was found that the face was no representation of the contents of the package. In fact, many packers seemed to think that it was their right to put the finest apples on top in order to effect sales.

THE SEED BRANCH

SEED INSPECTION SUMMARY

BY E. D. EDDY, B.S.A., CHIEF SEED INSPECTOR

IMPROVEMENT in the seed trade is clearly shown by the inspection work last spring. Not only was there a decided increase in the proportion of high grade seed on the market, but both the wholesale and retail dealers were more careful than ever before to conduct their business in conformity with the Seed Control Act. During the season 665 violations of the Act were detected by the inspection staff compared with 708 in the spring of 1914 and 839 in 1913. That this decrease is due to better conditions in the trade is indicated by the fact that it occurred when more inspectors were employed and the work done more thoroughly than ever before. The violations of the various provisions of the Seed Control Act last spring were as follows: A large proportion of these were of a minor character and due to lack of familiarity with the Act rather than a deliberate attempt to disregard its provisions.

Section 6, 124 violations. This section requires that grain, when offered for sale as seed, and other kinds of seed for which grades are not defined, must be labelled with the common names of the noxious weeds which may be contained. Most of the violations for failure to comply with this provision are with grain, although there are a few with white clover and some of the grasses. Previous to the enforcement of the Act, large quantities of feed grain from Western Canada, containing many noxious weed seeds, were sold for seeding purposes in Quebec and parts of Ontario and the Maritime Provinces. The enforcement of the

Act has caused dealers and farmers to be more careful in the selection of the grain they sell and use for seed. Considerable ordinary commercial grain is still used for seed, but in most cases the dealers are careful not to represent it as seed grain.

Section 7, 228 violations. This section requires that timothy, red clover, alsike and alfalfa seed must be marked with the grade. Some violations of this section occur in the seed producing districts, where retailers purchase direct from growers and expose the seed for sale without having it marked with the grade. Many of the violations are with wholesalers' seed which has been shipped with the grade indicated on a tag instead of stencilled on the bags. Often the tags are lost in shipment or misplaced by the retail dealers. Wholesalers are advised to have the grade number stencilled on each bag. Frequently seed received from United States wholesalers is exposed for sale by retailers without being graded. This is especially common with timothy, which is usually sold by wholesalers under a brand name and often without the Seed Control Act grade being indicated. Retailers are held responsible for having such seed tested and properly marked before offering for sale.

Section 8, 52 violations. A violation of section 8 involves having seed marked with a grade higher than the analysis warrants. This is usually caused by dealers using a certificate on a sample which does not accurately represent the bulk lot. When a large bulk of seed is not thoroughly mixed different bags are

liable to vary considerably. If a sample from such a lot grades No. 2 by a narrow margin, being close to the No. 3 line, some of the bags are likely to be only No. 3 and dealers assume unwarranted risk in grading the whole lot on such a certificate. Occasionally cases are found where the seed in a bag which was properly marked has been sold out and replaced by inferior seed of a lower grade.

Section 9, 152 violations. A violation of this section involves exposing timothy, alsike, red clover or alfalfa seed for sale which is below the minimum quality defined for No. 3. Occasionally such violations are detected with wholesalers' seed which is supposed to have been tested and properly graded, but part of the lot does not conform to the grade indicated on account of variation as outlined above. Most of the violations of this section are through locally grown seed being offered for sale by farmers or local dealers without being sufficiently cleaned and tested.

Section 10, 57 violations. This section requires that seed must germinate in the proportion of at least two-thirds of the standard for good seed of the kind or be labelled to show the actual percentage of germination. A few violations were detected through root and vegetable seeds of low vitality on the market,

but the most serious cases are in connection with corn and some with oats. It quite frequently happens that oats from Western Canada which have been frosted and the vitality injured are sold as seed in the eastern provinces. There is always considerable danger of low vitality with seed corn; last year several large lots were found which would have given very unsatisfactory results. Injury to vitality in corn is rather difficult to guard against as the seed may deteriorate after being shipped by the grower or wholesaler, through heating in the car or under inferior storage conditions given it by the retailer or farmer. On this account responsibility is sometimes difficult to place and the experiences this season again emphasize the importance of farmers making sure that their corn is of strong vitality before planting.

Section 11, 45 violations. This section requires that paper packet seeds be stamped with the year in which they were filled. Practically all the large dealers are complying with this regulation, but a number of cases are detected each year where the date has been omitted by small dealers who apparently were not familiar with the provision. In some cases there appears to be an attempt to market old seed which is low in vitality without indicating how long it has been in the packets.

All over the United States there are springing up rural schools which take farm life as their educational plant and get an education for every child out of that life. Beginning in seed-analysis, seed-testing, milk-testing and the like, they are gradually transforming the old, dead rural school into a new kind of school in which every educational process is related to the life of the community. These schools are becoming the laboratories, the counting rooms, the workshops, the economic and social centres of their communities.—*Herbert Quick in The Banker-Farmer.*

THE DAIRY AND COLD STORAGE BRANCH

A NEW PHASE OF FRUIT MARKETING PROBLEMS

BY EDWIN SMITH, IN CHARGE GRIMSBY PRE-COOLING AND FRUIT STORAGE WAREHOUSE

WHILE the problem of the proper distribution of Canadian fruits, and especially of the tender fruits, is one that rests largely with thorough organization of selling and marketing agencies, there is still much to be accomplished through the improvement of the means of transportation from the grower to the consumer. It is of first importance that fruit should be placed before the consumer in a good physical condition. Not only must the fruit be fit for consumption, but it must have an appearance that appeals to the eye.

In approaching this problem with the facilities afforded by the Grimsby Pre-cooling and Fruit Storage Warehouse, we are working along the following lines, namely: picking, packing, refrigeration (pre-cooling and refrigerator cars), loading in cars and the distribution of the fruit as much as possible. All of these points are very important, and it is obvious that bad results will follow if one of them is emphasized and others neglected.

It is our assumption that new methods or changes in methods have to be shown the shipper and grower in order that he will take them up and advance them in a commercial manner. It was to this end, together with the purpose of securing useful information along the lines of fruit storage under refrigeration, that the Department erected and is now operating a pre-cooling plant and fruit storage at Grimsby. In order to actually show growers and shippers the advantages offered in such an equipment, it is necessary at times for the Department to pur-

chase fruit from the growers in quantities large enough to make carload shipments under refrigeration.

THE MARKETING PROBLEM

Let us examine how this affects the marketing problem. Last season a purchase was made of 2,270 6-quart baskets of Montmorency cherries for western shipment at a time when no shipper or grower would assume the risk. The fruit was pre-cooled and shipped to Winnipeg. The demonstration was a complete success, the fruit, purchased for 37 cents per basket, selling for 60 cents because of its splendid condition upon arrival. At the same time cherries were moving sluggishly in Ontario markets at prices around 30 cents. As a result of this, shippers have been eager to make western shipments of pre-cooled cherries during 1915, and such shipments have actually increased 900 per cent.

By placing carloads of cherries in western markets this season the shippers about Grimsby have so cleaned up the sour cherries that, instead of worrying about where they were to dispose of all of their fruit, many of them have actually had to search to find enough fruit to fill local as well as western orders. Orders for carloads have had to be declined on this account.

In addition to showing how fruit should be handled in carload lots, some work in the pre-cooling and shipping of small lots by express is being carried on. In this connection also we believe that there is much to

be accomplished in the selection of the right package as the results in our strawberry shipments show. In one shipment to Winnipeg a lot of strawberries from Vineland packed in 24 full-pint crates, such as are used in British Columbia, brought 10 cents more per crate than the berries sold in the ordinary crate of 24 boxes containing four-fifths of a quart each. The point I wish to emphasize is that by *showing* the grower how a certain quantity of his fruit put up in a particular package actually sold for less money than a little over one-half the same amount sold in another package, there is not likely to be any hesitancy exhibited on his part in drawing right conclusions.

CAR LOADING

A feature of demonstration associated with our refrigeration investigations is the proper loading of cars. Every car of fruit which

leaves the Grimsby pre-cooling plant is loaded after the best approved methods. All cars are fitted with false or raised floors; the baskets are loaded in tiers from the side, thus avoiding climbing on baskets, and bulkheads with proper bracings are placed in the centre of the car, providing for free air-circulation and ensuring a rigid load. The result is that the baskets arrive at their western destination without any breakage. Recently, a carload of fruit was shipped to Grimsby, less than forty miles, for pre-cooling. As a result of careless loading a large number of baskets were broken and several dozen had to be repacked in new baskets in order to be handled.

The false floor is also a protection against leaky bunkers. In a recent shipment to Winnipeg at least 200 baskets would have been lost through wetting, had they not been raised from the floor by the slatting. This false floor costs the shipper about \$3.30 per car.

Before us all lies the general task of shaping our course in these hours of trial in such a way that the nation will emerge stronger, saner and cleaner from the day of testing. Each has his special task. No man need think that the gods will forgive the shirker. In days when the sons of Canada, drawn from the civil life of the country, are giving the last full sacrifice that their country's liberties may be saved, we who are left behind may well mould our own conduct on finer lines. While there is much virtue in the life, finely lived, of a private citizen, citizenship means more than this. Some participation it means in public life, for the blessings of national privileges cannot and must not be dissociated from national obligations.—*Hon Martin Burrell.*

PART II

Provincial Departments of Agriculture

WORK OF THE WOMEN'S INSTITUTES

PRINCE EDWARD ISLAND

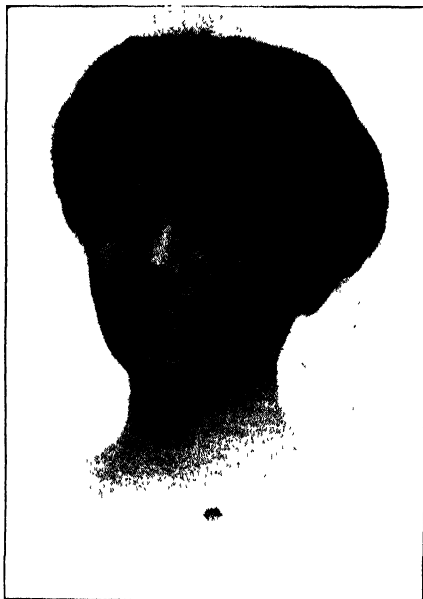
NO definite programme for the expenditure of the Federal Grant under Women's Institutes for this province has been outlined. The regular field work is being carried on, and the second

annual Women's Institute Convention has just closed. It is the purpose of the Department to hold short courses in Household Science during the coming winter, similar to those held last year.

NOVA SCOTIA

BY MISS JENNIE A. FRASER, SUPERVISOR OF WOMEN'S INSTITUTES

THE question has been asked "What are the Institutes of Nova Scotia doing?" The necessity of the times leaves only one answer to that question. Red Cross work and still more Red Cross work. That seems to take all the spare time of the members and much time that is not "spare." When the Institutes are not really doing that work, you may rest assured they have only ceased for a few days to enable them to successfully conduct a picnic, garden-party, concert or some other money making scheme to raise money to buy supplies to commence all over again. There seems to be no limit to the demand, and there also, fortunately seems to be no limit to the supply either of the many forms of Red Cross work, or of the energies of our women. Brain is required to suggest ways and means to supply the needed where-withal, and that is not lacking in



MISS JENNIE A. FRASER,
Supervisor of Women's Institutes, Nova Scotia

our Institutes. Brains are as plentiful in the by-ways as in the highways, and we in Nova Scotia rather pride ourselves on supplying an ample amount of the public brains of the Dominion.

Naturally the Institutes are not neglecting any community work they have undertaken, and do not neglect community work that calls for assistance at the present time, neither do they neglect their monthly meetings. But generally speaking, the work of the moment--and everything else fades into insignificance--is Red Cross work. A special effort is being made this summer to raise enough money to present a field ambulance as a gift from the Women's Institutes of Nova Scotia. They hope to raise this fund by September 30th, and it looks very promising as already four Institutes have responded with the promise of sums amounting to \$260, and there are still two months to complete the fund, and some thirty Institutes left to assist.

This year the offer of a library from the Travelling Library Department of McGill University will be renewed, but will be made a month or two later as the months of January, February and March are the

leisure or reading months. It is hoped to make some arrangement to meet the forty dollar guarantee demanded by McGill, as that clause in the agreement rather frightened some of the Institutes. The new building on the campus of the Agricultural College in Truro, the second floor of which is to be devoted to Women's work in Nova Scotia, is rapidly nearing completion. And suitable furnishings will be the next consideration. The possession of such a fine opportunity for developing work will make a tremendous difference during the next few years in the Institutes of Nova Scotia. Especially do we hope to develop the former short courses into something more definite and more thorough, and we are sure of the support of the Women's Institutes in future arrangements toward that end.

A number of demonstrations in cooking has been given to the Institutes this summer, and several series of organization trips have been arranged. We can truthfully say that the future of woman's work in Nova Scotia through the Institutes looks very promising. As more opportunity comes through added facilities the development will be more rapid and more thorough.

NEW BRUNSWICK

BY MISS HAZEL E. WINTER, SUPERINTENDENT WOMEN'S INSTITUTES

IN 1912 New Brunswick had 25 institutes; in 1913 the number had increased to 40; and at the present time there are 76 active societies, with a membership of 2,200, all doing excellent work.

In the early days of the work, the Department of Agriculture was greatly handicapped by lack of funds, until in 1912, under the AGRICULTURAL INSTRUCTION ACT, New Brunswick received a grant of \$3,000 from the Dominion government to aid in carrying on the work

which was so greatly to benefit the women of the rural districts.

Part of the appropriation goes toward providing each institute with a small but comprehensive library - books dealing with matters of health, hygiene, sanitation, home nursing, house planning, food and diet, and cookery. That these books are widely appreciated by the women there is no doubt, and many societies have added others until they possess quite extensive libraries.

Other information on topics of

peculiar interest to housewives is supplied through bulletins published from time to time. The bulletins now in circulation are "Food and Diet," "Home Economics as Applied to the Choice and Preparation of Food," "The Preservation and Care of Food," "A Little Talk with the Baby's Mother," and "The Uses of Fruits in the Household." Others are in preparation and will in a short time be ready for use.

A yearly grant of \$5 is allowed each Institute by the department, for the purpose of carrying on their meetings and corresponding with the department. At the same time, all books and report forms are supplied the societies.

From time to time delegates are sent out from the department for the purpose of organising new societies and visiting those already formed. In the fall of 1914, sixty-four places were visited by delegates and 64 meetings held, with the result that many new places were sufficiently interested to take up the work and many of the older organizations went on with their work with increased enthusiasm.

SHORT COURSES

In the early months of 1915, short courses of two weeks' duration were held at three points in New Brunswick, viz.: Woodstock, Sussex and Chatham. The classes were largely made up of women and girls from the rural districts who had not the opportunities of such instruction in the schools of their communities. The courses were practical and the instruction given was such as would be helpful to the housewife in her everyday life. The course of instruction included the following classes:

1. Cookery, Theory and Practice.
2. The Composition of Foods and Food Values.
3. A Short Course in Waitress Work.
4. Personal Hygiene and Sanitation in the Home.

5. Home Nursing.

6. Sewing, Cutting and Fitting.

7. House Planning and Furnishing, including several lectures on Interior Decoration.

Household science teachers and a trained nurse had charge of the classes, the students being enthusiastic in the work. It is felt that these courses are filling a long-felt want in the life of the rural housewife. It is hoped that, with the aid of the Dominion subsidy, a larger number of these courses can be put on in the future, and lasting perhaps for a longer period.

In 1915 a "field demonstrator" was employed by the department. This was found to be necessary because of the number of requests coming in to the department from societies for demonstration-lectures on subjects related to home life. These demonstration-lectures include such subjects as: "First Aid in Emergencies," "Hospital Nursing at Home," "Table Setting and Serving," "Care of Typhoid Patient," "Diet for Various Diseases," "Children's Diseases," "Cake Making and Bread Making," "Food Value of Eggs, Milk and Cheese," "Economical Cuts of Meat and How to Cook Them," "The Efficient Kitchen," etc. Often a demonstration of modern labour-savers is given. In many instances very interesting lantern lectures are given, with especially prepared slides. This has proved an effective method of illustrating lectures on Interior Decoration, House Furnishing and House Planning.

A REST ROOM

Each year, since the introduction of the work into New Brunswick, a Rest Room has been maintained at the provincial exhibitions for the benefit of Institute members. Literature bearing upon the work was available and demonstrations upon various subjects given. At Fredericton, where the Institute department

owns a separate building, built with funds from the Dominion subsidy, a model kitchen, dining room, living room and bed room were furnished and equipped.

Clippings, magazine articles, bulletins and lectures from the various agricultural, vocational, teachers and home economics colleges are kept on file in the head office and are catalogued. Every society in the province has a list of these subjects and is at liberty to secure them at any time. There has been a widespread demand for these articles. All material is classed under the following headings:

- The Child in the Home.
- Patriotic Topics.
- Christmas.
- Dietetics.
- Fabrics, Laundry and Cleaning.
- Fruits and Jellies.
- Gardening.
- Home Nursing.
- Hygiene and Sanitation.
- Interior Decoration.
- Labour Savers.
- Public Schools.
- Recipes.
- Vegetables.
- Handicrafts in the Home.
- Miscellaneous.
- Women's Institutes.

New material is being added from month to month. At present our catalogue includes 600 articles of interest to the present day homemaker.

Magazines are kept on file for reference in the office, and during the short courses, magazines and books bearing upon the work undertaken by the different classes are always on hand for the use of students who wish to supplement their work with outside reading. Some of the magazines are:

- Canadian Home Journal.*
- American Cookery.*
- Good Housekeeping.*
- Woman's Magazine.*
- Journal of Home Economics.*
- Mother's Magazine.*
- Craftsman.*
- House Beautiful.*
- Industrial Art.*

This reading course affords an opportunity to many rural women for the wider knowledge which they have often desired but have not been able to obtain in any other way.

THE ANNUAL CONVENTION

In October--the 5th, 6th and 7th--the 3rd annual convention of the New Brunswick Women's Institutes takes place. In order that Institutes new in the work may be represented, the Department is paying all travelling and living expenses of one delegate from each society organized since the last convention. Several new features are being introduced at the convention, one of which is an exhibition of handicraft made by New Brunswick women. An attempt will be made to interest the women of the country in the new handicraft movement. It is hoped that after instruction has been given along the right lines, many women of the province will take up the various crafts, such as rug-weaving, basketry, metal-work, leather-work, wood-carving, etc., and it is now assured a market can be secured for such articles as can be made easily in the home.

Mrs. Laura Rose Stephen, of Huntingdon, Quebec, has been engaged by the department to give several addresses at the convention. Mrs. Stephen has travelled from the Atlantic to the Pacific giving instruction along lines of homemaking. Her ability as a public speaker and her wide knowledge of present-day affairs has placed her in the front rank of Institute workers. Those planning to attend the convention will be interested to learn that Mrs. Stephen will speak upon "Patriotism and Production in Relation to the Home," "The Influence of Environment," and "My Knowledge of Women's Institutes."

A very noticeable feature of the past year's work has been the interest and co-operation of all the Institutes in the province toward Red Cross

and patriotic activities. Since the beginning of the war, 2600 pairs of socks have been knit and sent away by Institute members; the sum of \$5,500 has been raised for Red Cross needs and relief work, and at present the Institutes have now on hand \$1,256.61 toward the purchase of a motor-ambulance for use in France.

The department has lately purchased woven tags bearing the crest of the New Brunswick Women's Institutes and the name "Canada"

beneath. These are sewn into all socks and hospital garments sent by Institutes to the front.

July 31st marks the close of the fourth year for the New Brunswick Women's Institutes, and especially does the past year show many changes and increased progress. The outlook for the fifth year is exceptionally bright and the women of our Institutes are entering the new year "as those whom greater thoughts and greater deeds await beyond."

QUEBEC

BY MISS KATHARINE FISHER, HEAD OF SCHOOL OF HOUSEHOLD SCIENCE,
MACDONALD COLLEGE

THE work of the Homemakers' Clubs in Quebec province is carried on under the direction of the School of Household Science, Macdonald College. Compared with similar organisations in the other provinces, the history of these clubs is unique, as the women of Quebec, unassisted by the Government, began this work themselves. Mrs. G. M. Beach of Dunham, Missisquoi county, may justly be regarded as the pioneer worker in Quebec as the first club in the province was organized under her leadership in January, 1911. From 1911 to 1913 other counties became interested and Miss S. J. Armstrong of Pontiac county, has done splendid pioneer work in that part of the province and has been the means of interesting the women of her county and of adjoining counties in the club work.

From the beginning, Macdonald College has taken an active interest in these organizations and, as the work grew, so many demands were made upon the College that in October, 1913, it was decided to appoint a graduate of the School of Household Science as Demonstrator to the Homemakers' Clubs of Quebec. Miss Frederica Campbell of Prince

Edward Island, a woman of wide experience in demonstration work and keenly alive to the problems confronting women on the farm, was appointed to this position. Until then the organizations had been known as the "Women's Institutes" and there was no common organization for the province. In February, 1914, however, a convention of representatives from the first formed Institute met at the College and drew up a constitution, changing the name to "Homemakers' Clubs." The main purpose of these clubs is the study of all matters relating to homemaking, co-operation in the work of the farm and the broadening of the social life of the community. The clubs are by no means limited to these subjects, however, as subjects relating to travel, music, literature, history, nature study and current topics may be found as part of their year's programme. They also frequently extend the work to the study of community, provincial and national problems, but their chief strength lies in the fact that women of all sects and classes may come together upon a common ground.

Some of the clubs have endeavoured to promote the interests

of the boys and girls of the community by giving prizes at school and county fairs for sewing, cooking, gardens, etc. Other clubs have been particularly interested in the work of the rural schools, in the improvement of the school and grounds and in medical inspection in these schools. Since the beginning of the war all the clubs have been doing patriotic work. In nearly every case the clubs raise their own funds for the materials which are to be made up and sent to Red Cross headquarters and large quantities of sewing and of knitted articles have been contributed.

In 1914 Macdonald College sent out four travelling libraries, but an account of these has already appeared in *THE GAZETTE*. The School of Household Science also maintains a Lending Library consisting of a complete set of Government bulletins from the United States and Canada on subjects of interest to the house-keeper, also magazine clippings, pamphlets and other literature which could be used in preparing pro-

grammes for club meetings. This library has proved invaluable in helping club members with their papers and addresses.

In June the second convention of Homemakers' Clubs met at Macdonald College and between fifty and sixty delegates from the thirty-three clubs now formed were present. The interest and enthusiasm displayed by these delegates is only one evidence of the splendid work which the clubs are doing in the province. Club members and speakers from different parts of the province addressed the convention on such subjects as "The Rural School," "Medical Inspection in the Schools," "Women and the Present War," "Uniform Textile Laws for Canada," etc. Discussions followed these addresses and various resolutions were adopted in reference to these questions. There is every reason to hope that the work will grow rapidly in the future and that it will be a large factor in promoting the interests of the women of the province, particularly those of the rural districts.

ONTARIO

BY GEO. A. PUTNAM, B.S.A., SUPERINTENDENT OF INSTITUTES

IN carrying on the regular work of the 850 Institutes of Ontario, between fourteen and fifteen thousand dollars of provincial funds are expended annually in sending speakers to address one and sometimes two meetings at each branch, and in paying grants and meeting incidental expenses. In addition to this "regular" work, we are enabled, with the \$6,000 secured through the federal grant, to offer the Institutes special assistance by way of demonstration-lectures in "Food Values and Cooking," "Home Nursing," and "Sewing." Demonstration-lecture work was fully outlined in a recent number of *THE AGRICULTURAL GAZETTE*, so it is needless to

repeat except to say that no line of work is of greater value or more appreciated by the women of rural Ontario, and we are planning to extend the work considerably during the coming fall and winter.

The good women in the province are so deeply interested in patriotic work that they hesitate to devote time to regular instruction work. Many Institutes which intended to take instruction last winter cancelled their applications for demonstration-lecture courses, as they wished to devote all their spare time to sewing, knitting and other patriotic effort. Classes will be formed at a number of centres the coming fall and winter.

ACTIVE WORK

In addition to demonstration-lecture work we are offering the Institutes in the northern sections of the province special conventions. The distance is too great for them to come to either London, Toronto, or Ottawa, so we have, during the past three or four years, planned for district conventions in Parry Sound, Temiskaming, Manitoulin, Algoma, Thunder Bay, Kenora, Rainy River.



GEO. A. PUTNAM, B.S.A.,
Superintendent of Institutes for Ontario

Our organization for carrying on work of all kinds in connection with the Women's Institutes is quite complete. We have branch institutes in nearly every riding of the province, and where more than two branches exist in the one electoral district we have a district organization composed of representatives from the branches. At the annual meeting of representatives from the various branches, district officers are chosen, and it is through these officers that the De-

partment arranges for the great majority of meetings, conventions, etc.

The work of the institutes is directed by the superintendent, who seeks the co-operation of lecturers, officers, and an advisory committee. The organization has extended until we now have a membership of about 25,000 with branch institutes at 850 points. The subjects considered in the work of the Institute cover a large field and deal with the home, the school, technical education, the child, the community, and more recently has been extended to include matters relating to the welfare of our country, her soldiers and foreign population. Not only are the topics considered of an educative nature but meetings are conducted in a business-like manner.

EXTENSIVE OPERATIONS

Women's institutes were first organized for the purpose of assisting the housewife with her housekeeping—the housing, feeding and clothing of the family—but the work has been extended to include a discussion of educational matters, social life, beautifying public places, establishment of public libraries—in short, to include all things that go to improve the condition of the members of the homes of a community.

In the summer of 1915 we sent lecturers to 825 places. Some of the subjects embraced in this series of meetings are given below:—

- "Consumption and its Prevention."
- "Household and Personal Hygiene."
- "First Aid to the Injured."
- "Contagious Diseases."
- "Home Nursing."
- "Household Economy as Applied to Diet and Health."
- "The Medical Inspection of Public Schools."
- "Physical and Mental Harm of Fault Finding."
- "Women as Nation Builders."
- "War and its Relation to Women."
- "The Foreign Woman in Canada."
- "Study and Reading Clubs."
- "The Advantages of Country Life."
- "Simple Entertaining in the Country."
- "The Problems of the Girl on the Farm."

"Recreation in Rural Communities."

"The Institute and Community Education."

"How and When Should a Girl Choose Her Future Vocation."

"Helping our Boys Find Their Right Place in the World."

"Building, Making-over, Decorating and Furnishing the Farm Home."

"Dress and Good Taste."

"Milk, Cheese and Eggs."

"Butter Making: Care of Milk and Cream."

"Salads and Soups—Why we should use more."

"Business Points—What one Ought to Know about Deeds, Mortgages, Wills, etc."

"Demonstration-Lecture Courses—An Important Development of Institute Work."

"Life Principles."

"Made in Canada."

IMPROVED SCHOOLS

There was a time in the life of rural Ontario when the country school was neglected by the parents of the children of school age. Such conditions have changed largely on account of the Women's Institutes of Ontario. To-day in many localities the women of the local Institute have co-operated with the teacher of the rural school in an endeavour to improve the conditions under which the country boy and girl gain their elementary education. In some sections of the province the Women's Institutes have organized parents' and teachers' associations and by means of this organization have brought the school and home into close touch. Many Institutes have undertaken to care for the rural school garden during the holiday months; to provide for dental inspection, sanitary drinking cups, and a supply of pure water, to give instruction to pupils in sewing and to assist with the rural school fair. Where local school boards have persistently refused to clean up the unsanitary and unsightly rural school many Women's Institutes have taken the matter in hand and by a vigorous use of much soap and water followed by necessary applications of paint and the planting of bulbs, flowers, shrubs, and trees, the country school has often been transformed into a beauty spot.

Besides providing more congenial surroundings for the child when at school, the Women's Institutes have been active along other lines with a view to safeguarding the health and morals of the child, as well as providing healthful amusements for the young people of the district. A few Institutes have arranged to provide the children attending school with hot dinners. "Clean Mouth Leagues" have been organized in a number of schools, while others have been provided with libraries, pianos and proper heating systems.

COMMUNITY WORK

Technical education in domestic science is a recent addition to the many activities of the Women's Institutes. Demonstration-lectures in "Food Values and Cooking," "Sewing" and "Home Nursing" are given at a nominal fee to groups of women and girls in a community where the Institute will agree to advertise the course, supply a suitable hall and the necessary supplies. The course includes ten lessons, and should the class be large enough and desire it, two or three additional lessons will be given on "Dairying," "Bee Keeping," "Poultry Raising" or "Gardening," or any two of these.

The Women's Institutes of Ontario have done more to foster a community pride and spirit than any other rural organizations in the province. The members of the Institute have been quick to see that rural life could be improved in very many ways and they have been just as quick to undertake to improve these conditions. The following is a partial list of work being done by Institutes:—Erecting drinking fountains, horse troughs, driving sheds, open air skating rinks, dressing rooms for boys and girls at bathing places, fences and roofs of churches, sidewalks, street lamps, seats and tennis courts for parks; visiting the sick of a neighbourhood; providing prizes for best kept lawns and flower gardens; organizing an-

nual community picnics and literary societies for the study of the best authors and for debating; waging war on the weeds growing on the country road-side, and cleaning up the too-often ill-kept country cemetery.

PRACTICAL PATRIOTISM

Since the present war began the operations of the Women's Institutes have been largely of a patriotic nature. Their contributions towards the hospital ship fund were generous, and much larger sums were given to the Red Cross and Belgian Relief. Their cash donations already total at least \$40,000, and the supplies of various kinds, furnished for our soldiers, will at a fair valuation amount to a sum nearly equal to their cash donations. Local relief at the same time has been given to many needy ones. The ever-watchful workers of these Institutes have

also given aid and sympathy to many of the destitute and lonely foreign population of their districts—in short they are ready and willing to do what they can, when and where they can, for the improvement of rural conditions in Ontario.

In all their activities the members recognize that their first duty is to the members of their own families. Food values, wholesome cooking, economical providing, household sanitation, care and feeding of children, household conveniences, and those things purely of the home have not been neglected.

The Women's Institutes of Ontario have accomplished much and have stimulated other organisations and municipal councils to undertake work of lasting value to the rural residents, but as yet the women of the province have only begun to realize the power they may exert through co-operation in bettering the physical, intellectual, and social life of the people.

MANITOBA

BY S. T. NEWTON, SUPERINTENDENT EXTENSION SERVICE, AGRICULTURAL COLLEGE

POSSIBLY the most progressive element in Manitoba life is the women's organizations. During the past year the attendance of women at short course lectures throughout the province was one-third larger than that of the men, consequently, in setting aside a larger appropriation for women's work, the government is acting in the best interests of permanent agriculture.

In order to have an effective local organization which will co-operate with the Extension Service section of the Agricultural college, Home Economics societies have been organized in many parts of the Province. These societies usually meet once a month, when subjects dealing with both rural and urban life are discussed by the women in a capable

and efficient manner. When desired, literature dealing with the subject chosen is sent to the secretary of the society.

To encourage the societies to provide for libraries and other progressive methods of instruction best suited to local conditions, a grant of 50 cents for the first twenty members and twenty-five cents for each additional member is given by the government. This grant, along with the fees contributed by the members, enables the officers of the society to carry out a progressive programme throughout the year.

Since the outbreak of the war, a considerable part of the grant has been used to buy material which the members made into garments and forwarded to the Red Cross organization.

The programme for the coming winter has not been definitely decided on. The opinion of the members of the societies is being obtained,



S. T. NEWTON,
Superintendent of Extension Service, Manitoba
Agricultural College

and from the reports already received it would seem that the following lines of work will be carried out:

A one or two weeks' course in

Dressmaking or Millinery with an expert dressmaker in attendance, not so much to teach as to superintend the sewing, for each woman will be working on her own problem with such assistance as she may require from time to time. Very naturally considerable teaching will be done incidentally.

Arrangements are being made for classes in the forenoon for the senior pupils of the school in most cases.

In many parts of the province halls are not available where there seems to be the strongest desire for this work, and it is hoped to use passenger coaches, which will be equipped with sewing-machines, tables, fitting-platforms, etc. The car would be run on to a siding for the week and used as a travelling schoolroom.

Demonstrations in Cookery, Home Nursing, Canning and Preserving will be given in connection with all the societies of the province and at as many other meetings as possible.

However, the best work is being done by the women themselves in their own societies. By the aid of a strong organization they are reaching out and assisting all phases of rural life, the school, the church, boys' and girls' clubs, rural co-operation, etc.

SASKATCHEWAN

AT the beginning of the present year, a Director of Household Science for Saskatchewan was appointed as an official of the Department of Education, and entered upon her duties the first of February.

Her first work was to visit the Normal Schools at Regina and Saskatoon, and also the Third Class Normal Sessions held at various places in the province. All the

centres at which Household Science is taught were also visited. As the teaching of the subject is, at the present time, confined to the four cities Regina, Moose Jaw, Saskatoon and Prince Albert, special stress is laid upon introducing the work in rural communities.

The two questions asked by Boards of Trustees are: What will be the cost of equipment for this work? And, What time will be

required for it on the regular school program? As the work has been

carried on successfully in a rural school, a brief account of it will answer these questions.



MISS FANNIE A. TWISS,
Director Household Science, Saskatchewan

SPECIMEN WORK

To the enthusiasm of the School Inspector and of the teacher is due the credit of starting the work in Cobourg School District, four miles south of Moose Jaw. The teacher called a meeting of the School Board and placed the proposal before them. Then a mothers' meeting was called and it was discussed with them, with the result that the necessary equipment was procured and the work was soon under way. The majority of the children came a considerable distance which necessitated the bringing of lunches. This noon lunch was the basis of the work in Household Science.

Twenty-eight pupils were attending regularly and equipment and supplies quoted are such as would be necessary for a school of from twenty-five to thirty pupils. The



EQUIPMENT FOR HOUSEHOLD SCIENCE, COBOURG SCIENCE DEPARTMENT,
SASKATCHEWAN

equipment, which included coal-oil stove, oven, utensils, table-cloth, etc., amounted to twenty-seven dollars and thirty-five cents, at retail prices. The staple supplies as flour, sugar, cereals, etc., were supplied by the School Board at an expenditure of five dollars, which was sufficient for eight weeks. The mothers of the children supplied, at the discretion of the teacher, perishable supplies, as milk and butter, six quarts of the former and one-half pound of the latter being used weekly.

soups, corn starch puddings, baking powder biscuits, muffins and occasionally candy.

THE DUTIES ASSUMED

Eighteen pupils were sufficient to undertake the work in connection with the lunch. They were arranged in three groups, one group being composed of boys only, and these took turn in doing the work each day. The duties of the workers varied daily and the time spent by them occupied from twenty to



NOON LUNCH AT COBOURG HOUSEHOLD SCIENCE DEPARTMENT, SASKATCHEWAN

The children individually brought such supplies as vegetables, eggs, etc., when required. Three cents per day was the average cost of the coal-oil used for fuel.

The school has a good basement in which the equipment was placed and two trestle tables found there were made use of in serving. Here, one hot dish was prepared daily and used to supplement the lunches brought by the children. These dishes include cocoa, cream of wheat with dates, cream of vegetables

thirty minutes, which was usually partly at recess, and partly at noon. The serving was accomplished on the cafeteria plan and the children sat around the trestle tables. These were spread with linen table-cloths which, together with the dish towels and individual hand towels, had been hemmed by the pupils during the sewing lesson on Friday afternoons.

The laundering of the table-cloths amounted to twenty cents weekly, but this could be eliminated if the children had them done at home.

Each child brought his own cup and saucer, spoon, knife and fork. Paper table napkins were furnished at a cost of about five cents per week. An average cost of running expenses might be quoted at three cents to the mothers, and three and four-fifths cents to the Board, per capita per week.

It is apparent that the success of

this work depends largely upon the teacher and, in order that teachers may receive training for carrying it on in rural schools, a summer session was established this year at the Provincial Normal School, Regina, and the course given proved most successful. It is the intention of the Department to grant certificates to those teachers who complete satisfactorily two summer sessions.

UNIVERSITY OF SASKATCHEWAN

BY MISS ABBIE DELURY, DIRECTOR

THE Homemakers' Clubs of Saskatchewan correspond to the Women's Institutes of Ontario and the other provinces, the object of their existence being (like that of these sister organizations) to make life brighter and better, and more interesting for the home woman and to give her opportunity for companionship with others.

The organization of the Homemakers' Club is, perhaps, a little different from that of similar institutions in the other provinces in that they are affiliated with the Provincial University as a part of its extension department. They have not yet organized into districts. Need of such organization has not yet been felt and the clubs are so widely scattered and distances so great that it would not be generally practicable.

It is hardly five years since the first club was organized, and at present the number is nearly one hundred and fifty. The membership varies according to the district. Some clubs have to begin with ten or twelve members. Many have a membership of nearly one hundred. The school district is the unit for organization, but sometimes a club is made up of representatives from three or four districts. Ten miles is not considered too great a distance to drive to attend a meeting. So large a part has the work begun to play in the woman's life that if

it happens that a club member removes to a district where there is no club she finds something lacking until she has managed to organize one.

At the present time the clubs are scattered east and west from one border of the province to the other, and from the southern boundary to forty miles north of Battleford.

WORK OF THE CLUBS

The work undertaken by each club depends largely on the needs of the women themselves, and on the needs of the community. All are interested in home problems and are anxious to get the young people interested. School interests seem to come next in importance and much has been done towards encouraging school gardening, improving and beautifying of school grounds and buildings, and school sanitation. The work of the school children is given a large part in the Homemakers' local fair. The fair has become a large feature in the summer work of the clubs. Prizes are offered for school garden products, penmanship, maps, composition and drawing. This year Red Cross work and activities of a like nature have necessarily been to the fore and much has been accomplished and is still being accomplished. The following is a typical Homemakers' club programme:

JANUARY 8

TOPIC: Woman's Part in Canada's Progress.

FEBRUARY 13

TOPIC: Why I should be a Homemaker.
History of St. Valentine.
Humorous Reading.
Valentine Supper.

MARCH 13

TOPIC: Influence of Home and Surroundings.
Ways to Lighten Labour.
Reading.

APRIL 10

TOPIC: System in Housework.
Suggestions and Recipes for Curing and Preserving Meat in Summer.

MAY 8

TOPIC: Principles of Cooking and Food Values.
Cake Demonstration.

JUNE 12

TOPIC: The Making, Keeping and Marketing of Butter.
Report of Convention Delegates.
Demonstration: Tea, Coffee and Cocoa.

JULY 10

TOPIC: Sunday Dinners for Summer.
Demonstration on Ice Cream.

AUGUST 14

TOPIC: Relation of Parents to the School.
Salad Demonstrations.
Reading.

SEPTEMBER 11

TOPIC: The Family Pocket Book and Household Management.
Preparation for Threshing.

OCTOBER 9

TOPIC: Child Nature, and Care of the Children.
Story of Hallowe'en.

NOVEMBER 13

TOPIC: Courtesy and Good Manners in the Home.
Annual Election of Officers.

DECEMBER 11

Christmas Program by Club Members and Their Families.

HOMEMAKERS' CONVENTION

The Homemakers' Convention is, perhaps, the greatest event in the

life of the clubs. It is held annually at the University, usually in May. The delegates are accommodated at the University residence, which until this year has been able to shelter them all. The Convention has become so large that this is no longer possible. An official delegate is sent from each club, which means that railway expenses are paid by the Department of Agriculture. Usually a club sends a second one at its own expense, and many others choose to come of themselves. The following is the programme of the Convention held last May:

FIRST SESSION

Address of Welcome: President Murray,
Dean Rutherford.

Director's Report.

Modern Education: Dr. Wilson,
Regina Normal School.

SECOND SESSION

Our Book Shelves: Miss Mary Mantle.
The Rural School: Mr. Snell, Saskatoon
Normal School.

Poultry Keeping: Professor Baker.

EVENING SESSION

The Work of the Department of Field Husbandry: Professor Bracken.

THIRD SESSION

Business Session, Discussion, Reading of Reports.

FOURTH SESSION

Living Twenty-four Hours a Day:

Mrs. A. V. Thomas, Winnipeg.
The Work of Women Grain Growers' Association: Mrs. McNaughton,
President, Saskatchewan W.G.G.A.
Visit to University Grounds and Buildings.

EVENING SESSION

Lantern Slide Lecture on Gardening:
Mr. Norman Ross, Indian Head.

FIFTH SESSION

Common Physical Defects of School Children: Dr. Annabel McEwen,
Medicine Hat.
The War and Some of Its Outcomes:
Mrs. Arthur Murphy, Edmonton.

SIXTH SESSION

Women's Work in Manitoba:

Mrs. Dayton, Virden, President,
Manitoba Home Economics' Clubs.
Value of Co-operation:
Mr. W. W. Thomson, Regina.

The help given to these clubs from the University is of various kinds. Speakers and demonstrators are sent to visit the clubs, or to speak at open meetings, picnics, etc., given by the clubs. Short courses of from two to four days' duration are given at different points during some of the winter months, and are very largely attended. Literature in the form

of bulletins is produced for them from time to time. As far as has been possible, both reference and circulating libraries have been sent about.

The work seems to be growing in interest and enthusiasm and appears to be supplying a need that was, and is, very much felt in the life of the country.

ALBERTA

BY MISS A. CARLYLE, INSTRUCTOR IN DOMESTIC SCIENCE

THE rapid progress made in connection with the improvement of woman's lot in the province of Alberta has been due to three main facts, namely: The Dominion and the Provincial Governments' financial assistance; the enthusiastic and conscientious efforts of those in charge of this branch of the Department of Agriculture; and the ever-increasing interest and appreciation on the part of the women of the province themselves.

This year, at the close of the session in the three Provincial Schools of Agriculture, the three young ladies in charge of the Household Science work at the schools were asked to convene with the Provincial Superintendent of Women's Institutes, Miss McIsaac, and a schedule for the summer's work was arranged. According to this schedule, the Province was divided into three parts and plans were made for each branch institute to receive a lecture or demonstration, and also for the organization of new branches in those parts not to be visited by the demonstration train. To successfully accomplish this latter aim,

advertising was done at least two weeks in advance of the time of meeting, and the results were all that could be desired.

The Federal appropriation of fifteen hundred dollars to Alberta for Women's work, under THE AGRICULTURAL INSTRUCTION ACT, is being expended in meeting a portion of the salary and travelling expenses of the Superintendent, Miss McIsaac, the travelling expenses of the three other teachers from the schools, and the advertising and incidental expenses of the meetings.

We are indeed grateful for the fact that this extra assistance was made possible this year, because we are convinced that the Women's Institute as an organization is a powerful instrument in promoting the best interests of the women of the Province; and in many districts there was lacking only some person who would take the initiative. Practically every real woman realizes that she has a duty to perform in the way of studying and putting forth her best efforts on behalf of the welfare of the home and community life.

EXPERIMENTS WITH COMMERCIAL FERTILIZERS

NOVA SCOTIA

BY JOHN M. TRUEMAN, B.S.A., PROFESSOR OF AGRICULTURE

INVESTIGATIONS extending over a number of years have demonstrated that the soil on the Agricultural College farm needs only some form of phosphoric acid in addition to barn-yard manure. Very little or no advantage has resulted from the use of potash. This year, therefore, our experiments with fertilizers are confined to the use of various forms of phosphoric acid.

In addition to this we are studying the value of ground limestone when applied in fairly liberal amounts to the soil. A great many inquiries reach us from farmers asking for definite information as to the use and money value of the ground limestone.

DETAILS OF EXPERIMENTS

The following outline shows what fertilizers have been used and on what crops:

Mangels, All plots 1 acre. Fertilizer used. Plots No. 1, 2 & 3. 1000 lb. Basic Slag (Sydney).

All the mangel plots were treated with the same fertilizer. Each plot was seeded with a different variety of mangels and one half of each plot was treated with 2 tons of marl. This experiment is intended to test the three different varieties of mangels, and the effect of lime upon the soil.

Turnips.	All plots 1 acre.
Plot No.	Fertilizer used:
4	1000 lb. Acid Phosphate.
5	1000 lb. Raw Rock Phosphate.

6	1000 lb. Basic Slag (Sydney).
7	1000 lb. Acid Phosphate.
8	1000 lb. Basic Slag (Sydney).
9	800 lb. Filter Residue (From Sugar Refinery, Halifax).
10	1000 lb. Acid Phosphate. One half of plot treated with 2 tons ground limestone, other half with 2 tons marl.
11	1000 lb. Basic Slag (Sydney).
12, 13, 14	Soft turnips and rape treated with 1000 lb., Basic Slag.
15	1000 lb. Acid Phosphate, one-half of plot treated with 2 tons ground limestone.
16	Rape with 1000 lb. Slag.

These plots are seeded with the same variety of Swede turnips. Plots Nos. 10, 12 and 15 are seeded with other varieties of Swede turnips.

TREATED WITH MARL

In field No. 5, oats were sowed on 8 acres, three alternate half acres were treated with 2½ tons of marl each. This land was seeded with timothy and clover when sown to oats and the effect of the marl on the succeeding hay crops will be noted. This marl is from Antigonish Co., N.S., and contains 85 per cent of lime.

In addition to the work of the farm department, the horticultural department is also testing the value of various fertilizers with and without lime, and the extension department of the college, in co-operation with farmers in the various parts of the province, is studying the same problems.

* NEW BRUNSWICK

BY J. B. DUROST, B.S.A., SCHOOL OF AGRICULTURE, WOODSTOCK

THERE are no fertilizer experiments being carried on this season directly under the supervision of the Department of Agriculture. However, a brief account of those carried on last season by the writer, together with a short discussion of results should be of interest to readers of THE GAZETTE.

A review of the customs report indicates that New Brunswick uses between one-third and one-fourth of all the artificial fertilizers imported into the Dominion. This does not necessarily mean, as we have heard some say, that our soils are poor. We have always been at a loss to understand why the farmer is being advised on all sides to use a certain proportion of concentrated foods in his rations for stock, but on the other hand is being told that the use of concentrated plant food for his crops is likely to result in a loss to himself. While we do not approve of any farmer "going it blind" in using artificial fertilizers, yet we are not among those who condemn the use of all concentrated plant food as so much waste of money.

The conditions which govern the profitable use of commercial fertilizers vary so much that no farmer is justified in listening to the "selling talk" of the fertilizer agent, or doing as his neighbour does, in using them. To make the best use of them the farmer must understand the composition of fertilizers and the probable effect of their actions upon his growing crop.

In order to bring this knowledge to the farmers the writer planned a series of experiments covering the principal potato growing sections of the province.

Fertilizer materials consisting of Nitrate of Soda, Sulphate of Am-

monia, Acid Phosphate and Muriate of Potash, sufficient to make the equivalent of a half ton of "High Grade" factory mixed goods, were sent to ten or twelve different points in this section of the province.

Meetings were called and these materials were displayed, their properties and action on the growth of plants explained. They were then weighed out in the proper amounts to make a mixture that contained the same proportion of ammonia, phosphoric acid and potash; and used in a comparative test with factory mixed goods.

The table on the next page gives the comparative cost, and the yields where one-half ton of factory mixed goods was used on an equal area against the home-made mixture containing the same amount and proportion of plant food.

It would be very difficult to estimate the far reaching results of the work done last year. Notwithstanding the difficulties presented by the war in Europe, which practically shut off the supply of potash, upwards of one thousand tons of fertilizer ingredients were bought for members of agricultural societies by the "New Brunswick Agricultural Societies United", for which purpose, this co-operative buying organization was organized in the spring of 1914. These one thousand tons were distributed to all parts of the province, and the experiments of last year are being repeated by the farmers themselves on a vastly larger scale. Many are using both the home-mixed and the factory-mixed and will make their own comparisons. Many are also using various combinations, the results from which will teach them the best "formulæ" for their respective soil.

RESULTS OF EXPERIMENTS WITH FACTORY-MIXED VS. HOME-MIXED FERTILIZERS ON POTATOES

- (1) Home-mixed.
(2) Factory-mixed.

LOCATION		Brand	Cost per Ton	Difference in Cost Price	Yields	Increase Over Factory-mixed
Canterbury . . .	(1)	4-6-10	\$26 50	\$13 50	58 bbls.	8 bbls.
	(2)	4-6-10	40 00		50 "	
Benton . . .	(1)	4-6-10	26 30	15 70	64 "	17 "
	(2)	4-6-10	42 00		47 "	
Woodstock . . .	(1)	4-6-10	27 00	15 50	49 "	2 "
	(2)	4 5-7-10	42 50		47 "	
Hartland	(1)	4-6-10	26 50	13 50	78 "	17 "
	(2)	4-6-10	40 00		60 "	
Florenceville . .	(1)	5-8-9	29 50	13 50	83 "	2 "
	(2)	5-8-9	43 00		81 "	
Bristol	(1)	4-6-10	26 50	13 50	55 "	5 "
	(2)	4-6-10	40 00		50 "	5 "
Bath . . .	(1)	4 5-8-9	28 00	13 50	96 "	18 "
	(2)	4 5-8-9	41 50		78 "	
Upper Kent	(1)	5-5-10	30 00	13 00	75 "	†
	(2)	5-7-10	43 00			
Kilburn	(1)	4 5-7-10	28 00	13 00	54 "	††
	(2)	4 5-7-10	41 00		54 "	
Glassville	(1)	4-6-10	28 00	12 00	53 "	
	(2)	4-6-10	40 00		47 "	6 bbls.
Millville	(1)	4-6-10	27 10	13 80	63 "	††
	(2)	4-6-10	41 00		63 "	
Cardigan	(1)	2 5-6-6	18 60	13 40	40 "	
	(2)	2 5-6-6	34 00		32 "	8 bbls.

†Crops on this plot looked better, but farmer did not keep figures of "factory-mixed" plots.

††More marketable potatoes on "home-mixed" plot.

MACDONALD COLLEGE

THE CHEMISTRY DEPARTMENT

BY H. S. HAMMOND, B.S.A., LECTURER IN CHEMISTRY

Orchard experiments to determine the most economical way of developing a thrifty orchard:

In this young orchard, fifteen plots are laid out. (including two check plots) to which various mixtures of fertilizers have been applied for the last seven years. In other respects such as cultivation, spraying and cover-cropping, the orchard receives the treatment approved by modern orchardists.

Experiments on the relative crop-producing powers of:

- (1) Barnyard manure.
- (2) Barnyard manure and fertilizers.
- (3) Fertilizers only.

The four year rotation practised on the college farm is used as the basis of this experiment, viz.:

First Year, Grain, sown with clover and grass seed.

Second Year, Hay.

Third Year, Pasture.

Fourth Year, Hoed crops, viz., corn, mangels and Swedes.

The land devoted to these experiments is divided into four fields, one for each year of the rotation. Each field is divided into three sections, A, B, C, and each section is again divided into three plots, each 1-10 acre in area.

Section A receives 20 loads manure once during the rotation, for the hoed crops.

Section B receives 10 loads of manure once during the rotation, together with such fertilizers as are considered advisable and practicable in good farming.

Section C receives fertilizers only in such quantities as are used in practice. The hoed crops receive the majority of the fertilizers, and a light application is applied to the hay fields.

These experiments are now in their

fourth year, i.e., this year will complete one rotation.

Very interesting results are being obtained, but no conclusions can be derived from the yields until one or two more rotations have been completed.

THE CEREAL HUSBANDRY DEPARTMENT

BY JAMES MURRAY, PROFESSOR OF CEREAL HUSBANDRY, MACDONALD COLLEGE

THE objects of the work with fertilizers at present under way at Macdonald College are:—

To ascertain if commercial fertilizers can be profitably used on this farm as a supplement to barnyard manure.

To compare the crop producing powers of commercial fertilizers and of barnyard manure when applied in a rotation in which grass and clover are included.

To furnish a concrete illustration to students and visitors of the application of the science of chemistry in its relation to soils, crops and fertilizers.

Devoted to this work is a block of about four acres divided into four fields—one for each year of a four year rotation. The rotation practised is the same as that followed on the main college farm, the crops grown being as follows:—

Field 1. $\frac{2}{3}$ oats; $\frac{1}{3}$ barley seeded with clover and grass seed.

Field 2. Hay.

Field 3. Pasture.

Field 4. $\frac{1}{3}$ corn; $\frac{1}{3}$ mangels; $\frac{1}{3}$ turnips.

Each of the four fields is divided into three equal sections, A, B and C, and each section is given separate treatment. Each section in turn is divided into three plots, each 1-10 of an acre in size.

On section A commercial fertilizer alone is used, on section B barnyard manure is supplemented with commercial fertilizer and on section C the fertilizer used is barnyard manure.

The fertilizers used are those that experience has proven to be best adapted to the particular crop to which it is applied.

These experiments were started in 1911 so that the crop of 1915 is the first one on the second round of the rotation. We can scarcely expect any definite results until at least the second course of the rotation is complete, but after that time we should be able to glean some data that will be of value to the ever increasing number of farmers who use commercial fertilizers in this province.

ONTARIO

CONDENSED FROM EXPERIMENTAL RECORDS

THE Ontario Department of Agriculture is carrying on a series of fertilizer experiments under the general supervision of Professor R. Harcourt of the Chemistry Department of the Ontario Agricultural College. The Professor is also conducting soil demonstration work. Experiments are further being carried on at Vineland Experimental

Station. In addition some of the District Representatives have conducted fertilizer experiments, but they are practically a duplication of the main experiments, being mainly designed to bring them to the attention of people locally, and to apply them to local conditions.

Five plot experiments, each plot one-fifth of an acre, are being con-

ducted with peach orchards at Vine-land. Sodium nitrate is applied at the rate of 150 lb. per acre. Potassium chloride, superphosphate and bone meal are applied at the rate of 200 lb. per acre. One plot, for purposes of comparison, is not treated.

SOIL DEMONSTRATION WORK

This work is conducted by the Department of Chemistry at the Ontario Agricultural College. Thirty-two plots in mangels of 3-200 of an acre each are being utilized. The area to be weighed is 1-100 of an acre. Seven plots are subject to no fertilizer. The others are treated, in variation of substances, with sulphate of ammonia, applied at the rate of 200 lb. to the acre, with superphosphate at the rate of 400 lb. to the acre, muriate of potash, 200 lb. to the acre, nitrate of soda, 125 or 250 lb. to the acre, blood meal at 300 lb. to the acre, calcium cyanamide, 125 or 250 lb. to the acre, basic slag, 400 lb. to the acre, rock phosphate, 1,200 lb. to the acre, Drury's feldspar, 1,400 lb. or 2,000 lb. to the acre, common salt, 400 lb. to the acre. These ingredients are varied according to the plots that are being experimented with. Two of the plots are also being subject to Radio-active fertilizer at the rate of 500 lb. per acre. For plot 26, Kelp is to be applied later at the rate of 1,000 lb. to the acre. In half a dozen cases nitrate of soda, calcium nitrate, sulphate of ammonia and superphosphate are used as top dressing, once in three dressings, twice in two and three times in one.

IN POTATOES

Nineteen plots of 3-100 of an acre are being experimented on in potatoes. The area to be weighed is 1-50 of an acre. No application of fertilizer is applied to Plot 1, no fertilizer is applied to Plot 2, but this plot is to be treated with gypsum

later. All the other plots are limed at the rate of two tons per acre with limestone dust. Four plots are subject to no fertilizer in addition. On three of the others sulphate of ammonia is applied at the rate of 400 lb. to the acre, superphosphate at the rate of 900 lb. to the acre, sulphate of potash at the rate of 200 lb. to the acre, the applications being varied. Plot 9 has nitrate of soda at the rate of 500 lb. to the acre, applied as a top dressing in two dressings. Plot 10 has blood meal applied at the rate of 700 lb. to the acre. Plot 11 has calcium cyanamide at the rate of 500 lb. to the acre, superphosphate and sulphate of soda being also applied in each case. In Plots 13, 14 and 15 sulphate of ammonia at the rate of 400 lb. to the acre and sulphate of potash at 200 lb. to the acre are mixed with 1,000 lb. to the acre of basic slag, in the first instance, 700 lb. of bone meal to the acre, in the second instance, and 2,000 lb. to the acre of rock phosphate in the third instance. In Plots 17, 18 and 19 muriate of potash and Drury's feldspar are added to sulphate of ammonia and superphosphate. Radio-active fertilizer is also added to Plot 18. Two other ranges each of the same area as the foregoing range of fertilizer plots are under cover crops, tests to be followed by fertilizer treatment based on results from these experiments.

IN POTS

Pot experiments are also being conducted under the same auspices each experiment being done in duplicate in series as follows:

Series A:—To study the properties and fertilizer value of new potash products made from feldspar by C. W. Drury, Queen's University, Kingston, Ontario.

Soil used:—Sand from Walsh, Norfolk County, Ontario.

Crop—Potatoes; 14 pots.

Size of Pot.—10" x 8" deep, holding 25 lb. sand.

Series B:—To study the properties and fertilizer value of new potash product. Kelp made from seaweed by Dominion Agricultural Chemistry Department, Ottawa.

Soil used.—Sand from Walsh, Norfolk County, Ontario.

Crop.—Potatoes; 10 pots.

Size of Pot.—10" x 8" x 8" deep, holding 25 lb. sand.

NOTE:—Pots 1 and 8 in series A act as complete fertilizer check pots for this season.

Series C.—To study the properties and fertilizer value of the new Radio-active fertilizer. The sample of Radio-active fertilizer used is crushed Carnotite rock.

Soil used. Garden loam.

Crop.—Lettuce (Grand Rapids); 8 pots.

Size of Pot.—10¼" x 7¼" x 5" deep holding 10 lb. loam.

Series D:—Similar to Series C.

Soil used.—Garden loam.

Crop.—Beets; 8 pots.

Size of Pot.—12" x 10" x 7¾" deep holding 30 lb. loam.

Series E:—Similar to Series D. & C.

Soil used.—Garden loam.

Crop.—Cabbage; 8 pots.

Size of Pot.—12" x 10" x 7¾" deep holding 30 lb. loam.

Series F:—Similar to Series A to test the new feldspar product made from feldspar by C. W. Drury.

Soil used.—Sand from New Lowell, Simcoe County.

Crop.—Cabbage; 14 pots.

Size of Pot.—12" x 10" x 7¾" deep holding 30 lb. sand.

Series G:—Similar to Series B to test the new potash product Kelp made from seaweed by Dominion Agricultural Chemistry Department, Ottawa.

Crop.—Cabbage; 10 pots.

Size of Pot.—12" x 10" x 7¼" deep holding 30 lb. sand.

WITH LIMESTONE SCREENINGS

Experiments were made with limestone screenings as a source of lime to soils:

Two carloads from Queenston Quarries:—This was the whole of the materials that pass through a ⅜-inch sieve used by the Stone Crushing Companies when preparing material for road purposes. These were distributed as follows:

One carload (40 tons):—*Horticultural*

Experimental Station, Vineland Station. Applied at the rate of 3 to 4 tons to the acre.

One carload (32 tons).—Welland:—This was used by 4 farmers mostly on Fall Wheat and pasture. Applied at the rate of 4 tons to the acre.

Seven carloads from Vinemount Quarries:—These were sent out experimentally. This material differs from that in the other cars in that nearly all of the larger stone has been sifted out leaving a limestone dust that approximately 90 per cent of which would pass a ten mesh sieve and 20 per cent would pass a hundred mesh sieve. These were distributed as follows:

Three carloads to Welland County on heavy soils at the rate of three tons per acre, principally on sugar beets, corn and garden crops.

One carload to Ste. Anne, on corn crops.

One carload to Bronte, among three farmers on corn crops.

One carload to Burlington, (Have not yet received full report).

One carload to Winona. Applied at the rate of three tons to the acre.

"STONEMEAL" FERTILIZER

Experiments are being made with "stonemeal" fertilizer on plot one-half acre in extent with heavy loam soil, Experiment 1 being conducted on the O.A.C. gardens. Each plot crosses rows of nearly all the common vegetables grown.

Experiment 2 is being conducted on the O.A.C. farm in field behind Poultry plant with a crop of potatoes.

Experiment 3 is being conducted on the O.A.C. farm in field behind Poultry plant with a crop of turnips.

Experiment 4 is being conducted on the O.A.C. farm in Puslinch field with a crop of corn. In each case in Plot No. 1 no fertilizer is being used, and in Plot No. 2, 1,000 lb. of "stonemeal" per acre.

IN THE GLASS HOUSE

Experiments are being conducted in the Glass-house also by the Chemical Department, Ontario Agricultural College, Guelph.

Experiment A is to test the immediate effect of new potash fertilizer made from feldspar by Mr. C. W.

Drury, of Queen's University. The crop is radishes, and the soil garden loam. Each plot consists of three rows, 3 feet by 1½ feet wide. Plot No. 1 is subject to no fertilizer. Plot No. 2 to nitrate of soda—23 grams, sulphate of ammonia—90 grams, superphosphate—226 grams, and Drury's feldspar—1,050 grams. Plot No. 3 is the same without Drury's feldspar. Plot No. 4 is all Drury's feldspar.

Experiment B is to test the effect of Radio-active fertilizer, the crop

being radishes, and the soil garden loam. Each plot consists of three rows, length 3 feet by 3 feet wide. Plot 1, no fertilizer is used, Plot 2, 73 grams is applied.

Experiment C is to test the effect of Radio-active fertilizer, the crop being tomatoes and the soil garden loam. This experiment was conducted in 7 inch pots, the treatments being given to eight pots. Pots 1 to 8, no fertilizer, pots 9 to 16, Radio-active fertilizer, 50 grams with the soil in the eight pots.

VINELAND STATION

BY F. M. CLEMENT, B.S.A., DIRECTOR

THE strawberry fertilizer experiment was undertaken to determine, if possible, the value of commercial fertilizer applied to strawberries:—

(1) Where an abundance of moisture is available at all times.

(2) Under natural conditions.

Plots of approximately one-tenth of an acre in duplicate are being used in each case. The fertilizer is applied to the soil shortly after the plants are set at the rate of 500 lb. bone meal, 250 lb. muriate of potash and 200 lb. nitrate of soda per acre.

We have no experiments to determine the value of a commercial fertilizer applied in the spring before the crop is picked. The necessary water for the one lot of plots is applied by means of Skinner irrigation, and all plots are mulched and cultivated after the plan of recognized methods. The work has been under way but one year, and, consequently, the results are available only as a report of progress and not as definite results.

NITRATE OF SODA ON CELERY

To one-half of each plot of celery is made every two weeks an application of nitrate of soda at the rate of 200 lb. per acre. The other half of the plot is used as a check. The plots are in duplicate and to one an abundance of water is supplied by means of the

Skinner irrigation; the other is watered only naturally. The object is to determine (1) the value of water applied by means of the Skinner system as a forcer for celery; (2) the value of nitrate of soda as a forcer with and without an abundance of water. This is the first year of the experiment and the plants have not yet been harvested.

LIME DUST VS. BURNED LIME

Dust screenings from stone crushers throughout the province have accumulated until there are now many tons of unused materials that are possibly wasted. These are largely limestone, and it is hoped to demonstrate their value on various types of soils. To do this and to compare with the burned (air slacked lime) plots have been laid out on clay loam, red clay, sand loam and sand. These soils are planted to apples, pears and peaches and if any benefit is to be derived it should be noticeable this fall. The burned lime was applied at the rate of 1500 lb. and the rock lime dust at the rate of 800 lb. per acre. This latter is proportionally high but the extra quantity was added because of the large percentage of coarse materials in it. No difference is yet noticeable in the texture of the soil as far as cultivation is concerned and it is yet too early to report on the effect of cover crops and the fruit.

MANITOBA

BY F. G. CHURCHILL, PROFESSOR OF SOILS, AGRICULTURAL COLLEGE

NO commercial fertilizers were used on the Manitoba agricultural college farm until the present year, when the following experiments were started by the Department of Soils. The plots were seeded to oats May 3rd, and the different fertilizers applied May 12th.

No results are available at the present time (July 9th) but the oats on the plots that received the sodium nitrate are somewhat farther along than the other plots.

Each plot 2 rods by 8 rods (1-10 acre), 1 rod between plots.

SERIES 100

Plot 101	Receives a complete mixture as follows:—	
	Sodium Nitrate	Per Acre. 150 lb.
	Superphosphate	400 "
	Muriate of Potash	150 "
Plot 102	Receives a mixture as follows:—	
	Superphosphate	400 "
	Muriate of Potash	150 "
Plot 103	Check no treatment.	
Plot 104	Receives the following:—	
	Superphosphate	400 "
	Sodium Nitrate	150 "

Plot 105	Receives the following:	
	Sodium Nitrate	150 "
	Muriate of Potash	150 "
Plot 106	Sodium Nitrate	150 "
Plot 107	Superphosphate	400 "
Plot 108	Check.	
Plot 109	Muriate of Potash	150 "
Plot 110	Mixture as follows:—	
	Sodium Nitrate	100 "
	Superphosphate	200 "
	Muriate of Potash	100 "
	Manure	8,000 "
Plot 111	Mixture as follows:—	
	Sodium Nitrate	100 "
	Superphosphate	200 "
	Manure	8,000 "
Plot 112	Manure	8,000 "
Plot 113	Check.	
Plot 114	Manure	8,000 "
	Lime	1,500 "
Plot 115	Lime	3,000 "
Plot 116	Gypsum	2,000 "
Plot 117	Gypsum	1,000 "
Plot 118	Check.	
Plot 119	Crushed Limestone	6,000 "
Plot 120	Crushed Limestone	3,000 "
	Manure	8,000 "

Some experiments are also being conducted by the field husbandry department in connection with the work in crop rotation.

SASKATCHEWAN

THE VALUE OF FERTILIZERS IN CROP PRODUCTION—OUTLINE OF WORK UNDER WAY ON THE INVESTIGATION FIELD, UNIVERSITY OF SASKATCHEWAN, SASKATOON

BY PROFESSOR JOHN BRACKEN, DEPARTMENT OF FIELD HUSBANDRY, COLLEGE OF AGRICULTURE

REFERENCE to the accompanying plan will show the location of the fertility project on the investigation field at Saskatoon. It comprises 12 blocks lettered C & D at top of plan and numbered 6, 7, 8, 9, 10 and 11 at left side of plan. Each block is subdivided into 104 plots. The project is planned to determine the value of each of twenty-one fertilizers or combina-

tions of fertilizers. Samples of the soils were taken from two places in each plot before the fertilizers were applied. The value of each of the fertilizers that were applied will be measured by its effect in the first year on the yield of each of six different crops, and in each of the second, third, fourth, fifth and sixth years on the yield of at least one crop.

At the expiration of each five year

period, soil samples will be taken to determine the loss or gain of plant food elements. Every fifth plot, as is indicated in the outline, is a "check plot." As six series are being used, the effect on the first, second,

third, fourth and fifth crops will be measured every year instead of one year in six as would be the case if only one series were used.

The fertilizer treatments that are being used are as follows:

BLOCK C

- | | |
|------|---|
| (1) | Fresh manure, legumes, organic matter and rock phosphates. |
| 2 | Manure—heavy, rotted. |
| 3 | “ heavy, fresh. |
| 4 | “ light, rotted. |
| 5 | “ fresh. |
| (6) | Fresh manure, legumes, organic matter and rock phosphates. |
| 7 | “ “ “ “ “ “ “ “ |
| 8 | “ “ “ “ “ “ “ “ |
| 9 | “ “ “ “ “ “ “ sodium nitrate and acid phosphate. |
| 10 | “ “ “ “ “ “ “ sodium nitrate and potassium chloride |
| (11) | “ “ “ “ “ “ “ rock phosphates. |
| 12 | “ “ “ “ “ “ “ acid phosphate and potassium chloride |
| 13 | “ “ “ “ “ “ “ sodium nitrate acid phosphate and potassium chloride. |

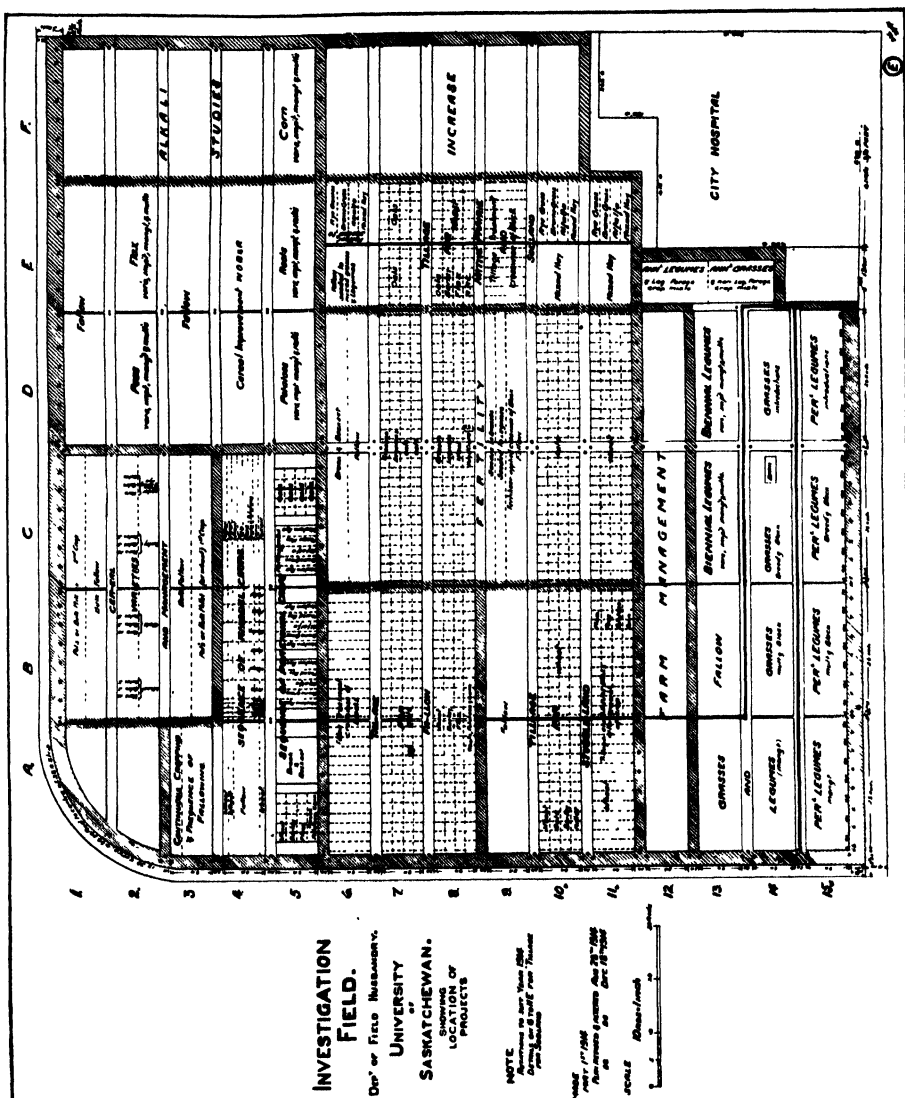
BLOCK D

- | | |
|------|--|
| 1 | Irrigation. |
| 2 | None. |
| (3) | Fresh manure, legumes, organic matter and rock phosphates. |
| 4 | Lime. |
| 5 | Sodium nitrate. |
| 6 | “ |
| 7 | “ “ “ “ “ “ “ |
| (8) | Fresh manure, “ “ “ “ “ “ “ |
| 9 | “ “ “ “ “ “ “ better tillage. |
| 10 | “ “ “ “ “ “ “ sodium nitrate and phosphate and potassium chloride. |
| 11 | “ “ “ “ “ “ “ sodium nitrate, acid phosphate and potassium chloride. |
| 12 | Sodium nitrate, acid phosphate and potassium chloride., |
| (13) | Fresh manure, legumes, organic matter and rock phosphates. |
- (Plots 1, 6, 11, 3, 8, 13 are "Check Plots").

The rotations used with each of the above-named treatments are as follows:

ROTATION

- 1st Year:—Fallow and apply fertilizers—south quarter seeded to grass; next quarter seeded to legumes.
- 2nd Year:—
 South Quarter—Grass.
 Next “ Legumes.
 Next “ Cereals.
 North “ Hoed crops, roots 3 rows, potatoes 3 rows, corn 6 rows.
- 3rd Year:—
 South Quarter—Grass.
 Next “ Legumes.
 Next “ Oats.
 North “ Oats.
- 4th Year:—
 Breaking and fallow.
- 5th Year:—
 Wheat.
- 6th Year:—
 Oats.



Rates of application of commercial fertilizers are as follows:

FERTILIZER APPLICATIONS

South Quarter:—

200 lb. sodium nitrate per acre or 4 lb.	per $\frac{1}{4}$ plot (1/50 acre)
300 lb. acid phosphate per acre or 6 lb	“
150 lb. potassium chloride per acre or 3 lb	“

Next Quarter:—

150 lb. sodium nitrate per acre or 3 lb	“
350 lb. acid phosphate per acre or 7 lb	“
150 lb. potassium chloride per acre or 3 lb	“

Next Quarter:—

150 lb. sodium nitrate per acre or 3 lb.	“
250 lb. acid phosphate per acre or 7 lb	“
150 lb. potassium chloride per acre or 3 lb	“

North Quarter:—

200 lb. sodium nitrate per acre or 4 lb	“
450 lb. acid phosphate per acre or 9 lb	“
200 lb. potassium chloride per acre or 4 lb	“

Some explanations respecting manures and crops named above may be given:

“Fresh Manure:”—production—less digestion and waste. (At first 10 tons per acre evenly distributed on all quarters. After first round of rotation to be corrected from the actual crop yields). Apply in spring before fallow.

“Organic Matter:”—winter rye sown with cereals before fallow at $\frac{1}{2}$ bushel per acre, to be ploughed under the following spring. (Subject to modification.)

“Manure”, Heavy Rotted:—ten tons per acre in spring before fallow.

“Manure”, Heavy Fresh:—twenty tons per acre in spring before fallow.

“Manure”, Light Rotted:—Five tons per acre.

“Grass:”—Brome 3 pounds and Western Rye 10 pounds.

“Legumes” in Rotation:—Alfalfa, in fertilizer treatment—2 pounds red alsike or sweet clover with cereals.

“Cereal” in Rotation:—Wheat first six years, possibly others later.

“Hoed Crops”:—Roots (Swedes), south 3 rows, potatoes, next 3 rows and corn north 6 rows.

It will be seen that the project will not only determine the value of the fertilizers or combinations of each used on each of six crops the first

year and their continued effect in each of the succeeding five years, but embraces four entirely separate crop rotations.

BRITISH COLUMBIA

FERTILIZER experiments with the following crops are being conducted:—

(1) *Onions*: The experiments are being made in triplicate. Three different growers at Kelowna have five plots each. The time of application, amount of fertilizer and mode of application are the same in each experiment.

(2) *Celery*: Five plots of one-tenth acre each are being tried on two farms at Armstrong. In addition, lime is being applied on new land planted to celery.

(3) *Potatoes*: Three experiments of five plots each (one at Salmon Arm, which is the same as tried in 1914, and two new ones at Armstrong) are being conducted.

(4) *Tomatoes*: One experiment of five plots is being conducted at Salmon Arm. This is also a duplication of the work done in 1914.

(5) *Raspberries*: A duplication of the experiment conducted in 1914 is being tried on the same block.

(6) *Strawberries*: A duplication of the same experiment tried in 1914 is being conducted, but on a new block.

(7) *Apples*: Same number of plots, etc., as for onions.

In the above experiments where five plots are used the fertilizer is applied as follows:—

Plot 1. Check Plot (not fertilized).

Plot 2. A complete fertilizer is applied.

Plot 3. Nitrogen and Potash are applied.

Plot 4. Nitrogen and Phosphoric Acid are applied.

Plot 5. Potash and Phosphoric Acid are applied.

CO-OPERATIVE WOOL MARKETING

MANITOBA

THE sheep industry has never received the attention it deserves in Manitoba, primarily on account of the high cost of fencing, an essential to the successful handling of sheep under present conditions. This difficulty, to a large extent, is now being overcome, and the breeding of sheep promises to become a staple industry.

Sheep should not only be a profitable branch of mixed farming, but their introduction into Manitoba's farming system will do much to help control the spread of noxious weeds, and an increased supply of lamb and mutton will go a long way in helping to reduce the cost of living, both on the farms and in the cities.

In order to encourage the sheep industry, and assist the farmers of the province in finding a satisfactory market for their wool, the provincial Department of Agriculture undertook to handle this season's wool clip for the farmers on a co-operative basis.

Upwards of 74,000 pounds, four car loads in all, were received, and finally sold to the highest bidder, a local firm securing the lot at \$26.80 per hundred, except for the tags. Much of the wool was lacking in yolk, weak in fibre, and dark, as compared with the bright wool of Ontario and

Quebec. This is easily accounted for by the fact, that in Manitoba sheep are largely used as weed destroyers, and allowed to run on the summer fallows, where a great deal of soil is blown into the fleeces.

On the whole, the results are regarded as most satisfactory, the price realized for the farmers, after paying the one cent per pound commission, charged for handling, being from five to seven cents more than would have been realized had the Department not taken up the work.

The grades, values, and quantities of each are given in the following table:—

GRADE	Value, cents	Amount, lb.
Fine combing	25	738
Fine medium combing	26	3,942
Medium combing	27 ¹ / ₄	16,222
Low medium combing	27 ¹ / ₄	32,843
Coarse combing	27	3,000
Lustre combing	27	5,745
Fine medium clothing	25	694
Medium clothing	25	4,359
Low medium clothing	25	2,403
Fine clothing	23	750
Rejections	23	1,391
Black	23	1,195
Cots	23	23
Washed	35	827
		<hr/>
Tags	8	74,132
		<hr/>
		504
		<hr/>
		74,636

SASKATCHEWAN

THE season's work in connection with the handling of wool for Saskatchewan sheep owners has just been brought to a successful conclusion. In all 306 sheep owners

marketed their wool through the Co-operative Organizations' Branch. The following is a synopsis of the kinds of wool and prices received:

	lb.	Price per lb.	Scale Testing	2 00
White wool..	145,570	25	Supplies, Telegrams, Rent of	
Black wool ..	628	20	Trucks and Miscellaneous.....	108 72
Tags (manure clotted locks)	1,336	7		\$596 00
Tags (manure clotted locks)	275	12 1/2		
Pulled wool	141	15		
Washed wool.	245	30		
Mohair	24	20		
Pelts...	120	12 1/2		
	148,339 from			
	22,000 fleeces.			

All the wool was handled through the warehouse at Regina, except some 29,000 pounds, which was loaded direct into cars at Tompkins. On all the wool passing through the warehouse a charge of half a cent per pound was made to cover handling, which amounted to \$596, made up as follows:

Warehouse rent	\$ 62 50
Insurance.	65.55
Exchange	91 38
Warehouseman and Help	152 50
Printing letters, instructions, forms, labels, etc	113 35

The shipments varied all the way from Mr. J. Glenn's 10,020 pounds down to Mrs. Wm. Graver's 12 pounds, thus showing the truly co-operative nature of the enterprise. Most of the shipments, however, were from owners of from 25 to 200 head of sheep. The wool was well and carefully prepared on the whole. The buyers, Messrs. Berman Bros., of Minneapolis, expressed themselves as well pleased, and anxious for the opportunity to bid again next year. It may be stated that the average price received, after paying for sacks and twine supplied by the Branch, also defraying freight from local points to Regina, drayage and other expenses, came to 23.66 cents per pound.

ALBERTA

BY E. L. RICHARDSON, SECRETARY LIVE STOCK ASSOCIATION

I am sending you herewith photograph of the wool which was recently sold by the Alberta Sheep Breeders' Association after

having been collected from its members and graded by the wool expert of the Dominion Live Stock Branch. The wool in the photograph was sold



GRADING WOOL IN ALBERTA

Twenty-six thousand dollars' worth (5 car-loads) in the Horse Show building at Calgary, sold by the Alberta Sheep Breeders' Association

for a little over \$26,000 to the Edmonton Hide and Fur Co. to be sent to Boston. The average price obtained was 27.77 cents per pound. The weights and prices of the various grades were as follows:

15,664	Fine Medium Comb	..\$	30
48,116	Medium Comb	..	31
6,368	Low Medium Comb	..	30
925	Coarse Comb	..	28
4,237	Fine Medium Cloth	..	22
3,347	Medium Cloth	..	25 $\frac{1}{4}$
871	Rejections	..	12
486	Gray and Black	..	17
2,602	Locks and Pieces	..	10
2,300	Tags	..	05
177	Mohair	..	20

85,093 lb.

Live Stock Branch of the Dominion Department of Agriculture in supplying expert graders so that the grades will be accepted by the purchasers without question. As far as I know this is the most successful sale of wool ever made in Alberta. It is, of course, most satisfactory to the breeders, as the Association does not charge any commission for selling the wool, merely charging the actual expense of the men handling the wool while it is being graded and the local freight charges to Calgary. The horse show building in which it is being graded is provided by the city of Calgary without charge. While the buyers



GRADING AND PACKING WOOL, CALGARY, ALBERTA

This is a very practical demonstration of the value of a co-operative sale and the manner in which the Sheep Breeders' Association can be of assistance to its members through the co-operation of the provincial government in assisting to finance the association from year to year, and the assistance rendered by the

pay more for the wool handled in this way than they would if purchased direct from the farmers, they are saved the expense of travelling from point to point collecting small shipments. They know exactly what they are buying of each grade and have five carloads properly collected in one place for shipment.

DEMONSTRATION CONTESTS

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THERE has not as yet been held any demonstration contests at the fall fairs in this province and I do not think there is

likely to be any this year, at least no appropriation has been made for this work.

NOVA SCOTIA

BY M. CUMMING, B.A., B.S.A., SECRETARY FOR AGRICULTURE

WE have not any regular organized system of demonstration contests at our fairs in Nova Scotia. At certain fairs, however, there are regularly held competitions in the judging of the various classes of live stock. These are for the most part confined to boys under twenty-five years of age, and their standing in the contest is determined partly by the placing of their stock and in part by their writing of reasons. This type of contest is now carried on in so many exhibitions in Canada that I presume it is unnecessary to enter into further details.

At a number of our fairs prizes were given for the best exhibits of seed grain, of sheaves of grain, of potatoes, turnips, etc., grown on fields which have been entered in our field crop

competition, which is now becoming a very important factor of our agricultural campaign. Some of these competitions are open to boys under twenty years of age and others to farmers of all ages. The rules of these competitions are, for the most part, the regular rules given with fairs and exhibitions, every competitor being required to exhibit a certain quantity of the produce of their field or fields which he has had entered in the various field crop competitions.

Some years ago we made a special feature of butter making competitions, etc., but later on came to the conclusion that better results could be achieved from the same amount of attention devoted to instruction at our short courses.

QUEBEC

BY J. A. GRENIER, SECRETARY FOR AGRICULTURE

THE Quebec Department of Agriculture will not organize this year demonstration contests at our fall fairs. However, we will continue to hold contests for the making of pasteurized butter, unpasteurized butter, cheese and for the pasteurization of skimmed milk.

These contests are open to all the members of the Cheesemakers' Co-operative Society.

We will also make demonstrations showing how to pack fruits in boxes and in barrels, at the different fairs, and particularly at the Quebec fair.

Demonstrations will also be given with trees bearing all their fruits in order to teach how to do chemical spraying. All the material required for the different works in an orchard will be exhibited. We will teach also

those who will be interested how to use some of these tools. Demonstrations will be given on the different methods of grafting the trees, pruning, spraying, drainage, irrigation, etc.

ALBERTA

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

ALL demonstration contests are held in connection with summer and fall fairs. Besides encouraging the holding of these competitions, the department sends judges to place the awards, pays two-thirds of the money offered as prizes and an official of the department has helped in the arranging of the prize lists. A large number of these lists include judging competitions and the handling and grooming of animals by boys and girls under a certain age.

A special feature which the department has been interested in is the exhibition of young animals,

either colts or calves, which have been fed and cared for by the exhibitor, said exhibitor not to be more than sixteen years of age. We have further requested that the prizes consist of some pure-bred stock instead of silverware or money, said live-stock to be the property of the boy or girl who wins the largest number of points after having shown the same animal two or three consecutive years at the same fair.

It is pleasant to be able to say that a number of societies have taken up this work and it has proven a very effective means of interesting the young people in local fairs.

It might be inferred that bankers are teaching farming and attempting to tell farmers how to run their business. The real fact is that bankers are teaching themselves in their effort to include farmers to absorb more knowledge and use more efficient methods. Bankers are not only receiving education and knowledge which is necessary to the conduct of their business, but also inspiration to live for a better purpose, and they are learning that the unselfish things that they do are what makes life really worth living. Incidentally they are showing the public that the banker's opinion on questions of public interest is valuable and worthy of the greatest consideration.—*J. R. Wheeler in The Banker-Farmer.*

Agriculture is not alone our financial stay, but a stalwart farming population is our best political and governmental bulwark—an anchor to windward.

The throbbing heart of national prosperity and national life lies in the growing crops, in the keeping of our farmers.

Whatever the problems, local or international, that we must solve in the near and unknown future, we will be the better prepared for them if we build up our agriculture and rural life, making the farm more likeable, as well as more profitable.—*B. F. Harris at American Bankers' Conference.*

PRINCE EDWARD ISLAND

NOTES

FIFTY-ONE egg circles in Prince Edward Island report for the second quarter of the year, 475 shipments of 372,868 dozen eggs of the gross value of \$68,310.72, and of the net value to the circles of \$64,244.58. No reports were received from 15 membership circles. The members shipping numbered 3,103.

Miss Helena C. McDonald, on the event of her father becoming Lieut.-Governor of Prince Edward Island, resigned her position with the Department of Agriculture for that province.

The Second Annual Convention of the Women's Institutes for Prince Edward Island was held in Charlottetown on July 20th and 21st. Upwards of seventy delegates were present.

Professor S. B. McCready, who recently resigned from the Directorship of Elementary Agricultural Education for Ontario, has received an appointment on the staff of the Prince of Wales College at Charlottetown as Professor of Nature Study. Professor McCready will continue and extend the work that has been carried on in that institution.

NOVA SCOTIA

COUNTY AGRICULTURAL REPRESENTATIVE VALUE

BY M. CUMMING, B.S.A., SECRETARY FOR AGRICULTURE

LESS than a year ago, the Department of Agriculture of the province of Nova Scotia appointed as their representative, to look after the agricultural interests of Antigonish County, Dr. Hugh McPherson. Since his appointment Dr. McPherson has actively devoted his attention to many lines of work calculated to advance the agricultural interests of his native county. Perhaps no more tangible line of work, capable of interpretation in terms of dollars and cents, has been carried on by Dr. McPherson than the co-operative marketing of wool, which with the aid of H. L. Hewson, of Amherst, he organized. Mr. Hewson, who has always been interested in promoting the sheep

industry of the Maritime Provinces, has recently been giving attention under the Federal Department of Agriculture to the proper marketing of wool by the farmers. Dr. McPherson at once sought his assistance. Commonly wool is washed, and without being graded is sold to the retail store. In the process of washing and rolling all grades of the wool become more or less inter-mixed, and proper sorting is rendered very difficult. The best buyers prefer to get their fleeces unwashed and properly rolled, so that they can sort the wool themselves. It was in this way that the Antigonish wool which Dr. McPherson assisted in marketing was prepared.

GOOD PRICES REALIZED

Altogether a little over 12,000 lb. of wool was marketed under the co-operative association which Dr. McPherson organized. The average price realized for the *unwashed* wool was a shade better than 36 cents in comparison with from 36 to 38 cents for washed wool which was being paid by the ordinary trade. And when it is considered that the wool shrinks from 25 to 50 per cent in weight in the process of washing, it will be observed that the farmers who marketed their wool under the expert direction of Dr. McPherson and Mr. Hewson thus realized about 10 cents per pound more for their wool than if they had sold it in the ordinary way, or in the aggregate rather more than \$1,200.

Another line of activity with which Dr. McPherson has identified himself has been in assisting farmers to buy their commercial fertilizer supplies co-operatively. Several carloads of those fertilizers recommended by Dr. McPherson were bought by farmers in Antigonish and Cape Breton counties last spring. One single agricultural society in Cape Breton, by purchasing in this way saved \$600, and other bodies of farmers saved correspondingly. Now a short-sighted view might make it appear that the money thus saved by co-operative buying and selling, being lost to the retail trade, did not represent such a large saving as appears on the face, but the facts are that when farmers can buy fertilizer more reasonably, and sell their goods more profitably, they purchase larger supplies, grow bigger crops, derive bigger returns from their farms and so add to the prosperity of the whole community in which they live. Ultimately every line of trade benefits from the prosperity of the farmer, and therefore every one who is interested in the welfare of the country is bound to indorse these lines of activity by which the farmers through organization are able to make bigger returns from their farms.

FERTILIZING EXPERIMENTS

Besides these lines of work Dr. McPherson organized and carried on a short course in agriculture in the town of Antigonish last winter at which there was an average attendance at each session of something over 200 farmers. Also, he is carrying on experiments with various fertilizers on typical soils of the county, which will form the basis for a still more intelligent system of fertilizing the land. Under his guiding hand too, a seed centre constituted of farmers, who are interested in growing seed of the highest quality on their own farms, has been organized, and is already resulting in an improvement of the character of farm crops on many farms. That is the subject of comment of every agriculturist who has had the opportunity to visit Antigonish of recent years.

Dr. McPherson is not alone in the work which he is carrying on, but has the backing of the county council and the board of trade of Antigonish, both of which bodies gave handsome donations towards the erection of a demonstration building suitable for carrying on classes in agriculture and also containing the offices in which Dr. McPherson makes his headquarters.

A forward movement has certainly begun in earnest in Antigonish county. In addition to the various lines of work already described, two new creameries have been constructed in the outlying parts of the county within the past two years and there is an agitation for still further development along these lines. Antigonish county, which for years has made little if any progress, is now developing in earnest, is bound to take a foremost place among the counties of Nova Scotia. When some historian writes up the history of this wonderful growth, he will find that not the least of the agencies which have led to the development has been the work of the county agricultural representative, Dr. Hugh McPherson.

QUEBEC

ALFALFA PLOTS

BY M. LIGUORI, SECRETARY QUEBEC FARMERS' EXPERIMENTAL UNION

IN a number of districts of Quebec province, alfalfa, like clover, suffered from winter killing. Members of the Experimental Union report that a little more than half of the total area seeded in alfalfa last year has been destroyed. However, wherever alfalfa had been sown in deep, healthy, well-tilled and well prepared soil, over three-quarters of the plants survived and these plants, owing to such favourable conditions, were thrifty and in good condition last fall.

The Grimm alfalfa, imported from Minnesota, and of which thirty-four plots were sown in various districts, has proved to be resistant. A variety imported from Belgium before the war also gave good results, leaving out accidents caused by exceptional frost during the last season.

All, or almost all, of our experimental fields, with the exception of the check plots, were inoculated with soil coming from alfalfa fields and almost all the reports of our members state that the plant has made a better growth in inoculated soil. It is believed also that inoculation, by means of soil coming from alfalfa fields or sweet clover fields, gives better results than inoculation by means of artificial bacteriological cultures. The latter method may give good results when it is employed by specialists but with ordinary farmers the success is very doubtful. It has been abandoned by our association.

Mention has been made of sweet clover (*Melilotus alba*) also called Bokhara clover by the trade. It is not intended to advertise this clover. It has been far too much advertised recently by salesmen and agents. If I mention this plant, which may be useful under certain conditions and on certain soils, it is specially to call attention to the fact that whenever patches of sweet clover occur on the farm, it is not necessary to secure, at great expense, soil to inoculate the fields that are to be sown in alfalfa. Too many farmers are ignorant of this fact.

To sum up, it may be concluded that on well selected and well prepared soils and with good seed, alfalfa may grow in almost all parts of the province. On the farms of the Oka Agricultural Institute, where twenty to forty arpents of alfalfa are annually harvested, it has been a success for the last twenty years and it gives regularly three crops of hay. In other districts it yields only two crops.

For the last few years, alfalfa has been tried under all the climatic conditions in the province by means of small experimental plots, varying from one-eighth to one-fourth of an arpent, seldom one arpent, but there are indications that in the future the executive of the association will limit the number of plots and increase their size.

MACDONALD COLLEGE

EXPERIMENTS ON THE CONTROL OF THE BUD MOTH

BY E. MELVILLE DUFORTE, B.S.A., M.Sc., ASSISTANT IN BIOLOGY

I. SPRING SPRAYING

THROUGH the kindness of Mr. W. Chisholm, manager of the estate of Mr. Edward Maxwell at Baie D'Urfe, I was permitted to conduct experimental spraying on a portion of the orchards on this estate which had for some time been badly affected with bud moth. The orchard under consideration was divided into a number of small plots, each consisting of about eight trees.

The sprays applied were as follows:

1. April 27th:—At the time that the buds were just starting to burst, the outer leaves showing green. At this time the larvæ were just beginning to enter the buds.

2. May 4th:—The buds quite expanded. The majority of the larvæ had entered the buds. Only a few remained in their hibernating nests.

3. May 12th:—Three days before the blossoms opened.

4. June 3rd:—Shortly after the fall of the blossoms. The length of time elapsing between the 3rd and 4th sprays was due to the fact that a cold spell just after the third spray delayed the flowering of the later varieties so that it was impracticable to apply the fourth spray before June 3rd.

The spray used was lime sulphur (concentrated home made) diluted to .0008 with lead arsenate paste at the rate of 5 lb. per 100 gallons.

Hereinafter these four sprays will be designated as 1, 2, 3 and 4.

TABLE I. PERCENTAGE OF BUD MOTH LARVÆ FOUND IN SPRAYED AND UNSPRAYED PLOTS ON JUNE 10-12

Spray	1	2	3	1, 3	1, 2, 3	1, 2, 3, 4	3, 4	1, 3, 4	2, 3	2, 3, 4	Check
Per cent bud moth left	16.3	5.8	8.0	6.8	6.1	1.6	3.8	(6.6) 2.5	9.1	2.6	19.3

A few explanations are necessary with reference to the above table. It will be noticed that two figures are given as the result of the combination 1, 3, 4. This is owing to the fact that one tree in this lot gave an exceptionally high count while all the others were uniformly low. Including this tree the average count was 6.6, but excluding it as an abnormal tree the average count was 2.5 which on comparison with the other figures is seen to be nearly what would be expected.

The percentage of larvæ found on the plot sprayed with 2 and 3 was larger than that found on the plots sprayed with either 2 or 3 alone. The only explanation which I can give for this anomaly is that the local area in the orchard was prob-

ably worse affected originally than the other parts of the orchard.

Because of the fact that the spray carried by the wind might influence the results of experiments the plots were so arranged that as far as possible each plot received the same spray as the one immediately to windward of it, thus lessening the error resulting from the interference of sprays. As an exception to this arrangement, it may be mentioned that the plot which received spray 2 only, was on the leeward side of the orchard so that the count obtained was possibly lower than it should otherwise have been. In fact, if we eliminate the row nearest the other trees, the average count would then rise to 8 per cent.

TABLE II. REDUCTION OF INJURY DUE TO THE DIFFERENT SPRAYS
PERCENTAGES

Spray.....	1	2	3	1, 3	1, 2, 3	1, 2, 3, 4	3, 4	1, 3, 4	2, 3	2, 3, 4
Reduction, per cent	15	70	58 5	64 8	68.4	91 7	80 3	(65 8) 87 0	52 8	86.5

From the foregoing tables it will be seen that the spray applied as soon as the leaves were fully expanded was the most effective of any single spray. The spray applied three days before the opening of the flowers was next in effectiveness, and the one applied as soon as the larvæ began to enter the buds was, contrary to the general opinion, not very effective. The effect of the fourth spray used singly was not tried, but its effectiveness in combination can be seen from the figures given above.

Where the usual spray calendar is followed there should be little difficulty in keeping this insect in check as the second and third sprays in the calendar correspond to the third and fourth given above, and it will be observed on referring to the figures that these formed the best two-spray combination.

II. SUMMER SPRAYING

On hatching, the larvæ of the bud moth almost immediately commences to feed on the under side of the leaf. A few hours later it builds itself a small tube within the shelter of which it continues feeding. It is an obvious assumption that if lead arsenate or some other poison is sprayed on the leaves before the eggs hatch, the first mouthfuls of the newly hatched caterpillar will be fatal. The results of experiments performed in 1914 and 1915 justify this assumption.

In 1914, several pairs of bud moths were placed on the branches of two small apple trees. These branches, with the bud moths, were enclosed in cheese cloth bags to ensure the laying of numerous eggs on each.

After the eggs were laid, the bags were removed and the trees sprayed with a suspension of lead arsenate in water at the rate of three pounds of powdered arsenate per hundred gallons. The results were entirely satisfactory. No accurate count was kept of the number of eggs laid, but a reduction of 80-85 per cent is considered a conservative estimate.

In 1915 the experiment was repeated. Three seedling apples were used which we will designate A, B, and C. These seedlings were enclosed in cheese cloth bags and several adult bud moths were placed on their branches.

The record of the experiment is as follows:

- June 28.—A, 110 eggs laid.
B, 240 eggs laid.
June 29.—C, 162 eggs laid.
June 30.—Sprayed A and B with lead arsenate suspension (2½ pounds powder per 100 gallons). Kept C unsprayed as a check.
July 8.—The eggs on A and B hatching and the caterpillars starting to feed.
July 9.—Eggs on C hatching. On A and B many dead larvæ could be observed.
July 11.—On this date a count was made of the three seedlings, giving the following results:—
On A there were two living caterpillars on their tubes, and on B six. In each case there were several dead ones in their tubes, and a very large number dead on the leaves, which were poisoned before they had an opportunity to form a tube.
On C (unsprayed) there were 155 living larvæ, which, with a very few exceptions, had already formed their tubes.
July 14.—The plants were examined again on this date; no living larvæ could be found on A and only one on B. On C they were all healthy and were busy skeletonizing the leaves.

It will be seen that the summer spraying was practically 100 per cent efficient. It is true that the experiment was conducted under ideal conditions, that is on small trees which could without difficulty be thoroughly sprayed, but there is no reason for doubting that with careful spraying the summer application will be very effective in controlling this pest. I say careful spraying because it is necessary that the under side of the leaves be sprayed as the young caterpillar almost invariably feeds on this side.

As to the advisability of applying the summer spray a great deal depends on the circumstances. In a mild attack it is doubtful whether it would be advisable to apply this

spray in addition to the spring applications. In a severe attack, however, where the spring sprays have failed to control the insect, the application of this spray about the end of June is strongly advised. In any case, if it is necessary to spray at this time for aphids, I should advocate the addition of lead arsenate at the rate of two and one-half to three pounds per 100 gallons of spray.

Next year further experiments on the control of the bud moth will be conducted at different points in the province, and at the conclusion of these experiments a full account of the life history, habits and control of the bud moth will be published.

ONTARIO

HORTICULTURAL EXPERIMENT STATION

BY F. M. CLEMENT, B.S.A., DIRECTOR

At the Vineland horticultural experimental station, with the aid of funds received under the provisions of THE AGRICULTURAL INSTRUCTION ACT, the Ontario Department of Agriculture is endeavouring to devise ways and means of making into a merchantable product some fruits that would probably otherwise go to waste. Peaches are to receive first attention and an attempt is to be made to use them for the manufacture of

cider, vinegar, syrup, jam or anything else that may appear possible. The experimental canning factory operated four years ago is again being fitted up and the work is to be hastened as rapidly as opportunity will permit. A portion of the federal grant is also being used in the equipment of a working laboratory. This work is in charge of Mr. P. E. Culverhouse.

FARMERS' AUTOMOBILE TOUR

IN the first week in July the first organized automobile tour of Ontario farmers took place. It was made up of about 40 farmers of the county of Dufferin, and the party was organized and the itinerary mapped out, and carried out, under the supervision of H. A. Dorrance, District Representative of the Ontario

department of agriculture at Orangeville. So general has the purchase of automobiles on the part of the farmers in this province become that they had very little difficulty in getting a few farmers to take their cars for the use of their neighbours who were not so fortunate as to own cars.

Accordingly the party started out

and first of all visited the neighbouring county of Peel, where there are a number of very fine stock farms, including the largest Jersey herd in the British Empire. They also visited a number of fruit and truck farms at the south end of the county, and from there went on, through the city of Toronto, to the county of Ontario. There they visited the stables of well known importers of high class Clydesdales, Shorthorns, etc., They

then on to the prison farm near Guelph, from whence they returned home.

They were most enthusiastic over the success of their outing and many wanted to arrange another trip at once, while others, who had not accompanied the party but heard about the trip, wanted to organise a new party. Not only was their trip a source of enjoyment but also a source of education. Immediately on his



PART OF THE AUTO PARTY IN FRONT OF THE PARLIAMENT BUILDINGS, TORONTO, WHERE THE PROVINCIAL MINISTER OF AGRICULTURE WAS MET

returned to Toronto for night and in the morning visited the Minister of Agriculture at the Parliament Buildings, where incidentally a moving picture was taken by the Department of Agriculture, for use in its departmental propaganda. There had been a heavy rain during the night and this somewhat interfered with the enjoyment of the first part of the trip on their last day, but they managed to visit one or two good stock farms in the vicinity of Weston and

return one of the farmers undertook plans to secure a pure bred milking Shorthorn bull for his neighbourhood, while others adopted advanced ideas which they had picked up during the itinerary.

There is no doubt that with the improvement of the highways and more general purchase of automobiles this farmers' automobile tour will become more and more a feature of rural life in this province.

CLOVER SEED AND OTHER CROP PROSPECTS IN NEW ONTARIO

BY T. G. RAYNOR, B.S.A., SEED BRANCH DISTRICT OFFICER FOR EASTERN AND NORTHERN ONTARIO

THE prospects for clover seed production in Northern Ontario this year are very poor. The killing out of the clover is attributed to the light snowfall last winter and the unusually heavy formation of ice on the meadows in the spring. A few good fields of alsike are to be found near Emo in the Rainy River district and around Oxdrift in the Dryden district. In the vicinity of Providence Bay and Mindemoya, Manitoulin Island, considerable of last year's seed is in the farmers' hands. They were too late in getting it hulled for the market last spring. In spite of the poor crop this year, there are good prospects for clover seed production in New Ontario. In the Dryden district farmers have received a gross return of from \$50 to \$100 per acre for alsike seed. A number of clover seed hullers have been brought into the district and clover seed production is likely to become one of the profitable branches of farming.

In Northern Ontario, the Sault district and Manitoulin Island have good hay crops. The red and alsike clovers came along late in June and thickened up the timothy meadows, making a heavy cut of mixed hay. The grain crops on Manitoulin Island are on the whole good and about the Sault and north shore except on wet lands. There will be more hay and grain along the north shore than will be needed for local requirements.

The Thunder Bay district with the Rainy River and Dryden districts will have enough for their own wants but not much surplus except in some lines of stock. These districts will have rather a light hay crop this year.

A large acreage was planted with potatoes but the wet weather caused much of the seed to rot. A good deal was replanted and what was not was quite patchy. The soft rot in potatoes is prevalent. The crop on light, well-drained land was looking fine.

The hoed crops were not very promising. There were many blanks in corn, mangels and turnips patches as well as potatoes. All the hoed crops were improving with drier and warmer weather.

This year demonstrates the need for under-draining all through the clay belt. Considerable drainage work is being done with the government ditching machine under the direction of the district representative.

One could note progress all through the north country as reflected in the farm buildings and stock. It looked encouraging to see so many flocks of sheep, especially on the north shore and Manitoulin Island. Much good work has been done upon the roads by grading them and in many places putting on good coats of gravel.

NOTES FROM DISTRICT REPRESENTATIVES

SUPPLIED BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

HALTON COUNTY

H. R. Hare, B.S.A.:—

"I called at a number of the schools where I had made arrangements to meet the presidents of these various schools and drove them to Hornby, where a meeting of the School Fair Board had been arranged for. Eleven schools are in the district and all were represented. They were strangers to one another and naturally at first were a little backward. However, by calling the roll, whereby they responded by giving a sketch of the school fair work in their schools they became more at home. Various officers were elected and these officers immediately took charge of the meeting. They elected their grounds committee, tent committee, live stock committee and sports committee. In addition to these, on their own suggestion they elected a refreshment committee whose business it will be to provide coffee on the day of the fair, to be sold from the booth at lunch time and also to sell ice cream and perhaps other refreshments during the afternoon. The proceeds from this are to be turned over to the school fair war fund. The enthusiasm exhibited throughout the whole meeting was an inspiration to the district representative."

"One afternoon I spent with one of the Short Course boys, covering the whole farm. He is taking an additional interest in farming this year and it is a source of pleasure to the parents to find that he is becoming more contented with the farm life and is this year seeing more possibilities of the business and intends to stay with it. He is in the corn and mangel competitions."

GREY COUNTY

F. S. Reeker, Outside Assistant:—

"The hog feeding competition is going to be a hummer. We called on Mr. Geo. Kennedy who showed us some hogs that he was feeding entirely on oat chop and he reports that he never had hogs that made such excellent and cheap gains. Mr. Kennedy tried the oat chop as a result of a lecture giving last year's hog feeding competition reports. The winner of the competition fed nothing but oat chop."

"We also visited an alfalfa experiment on the farm of Mr. John Thom of Walter's Falls. It was a three plot experiment, each plot containing 1/80 of an acre and the varieties tested on two of the plots were Grimm's Ontario Variegated. The seed for

the other plot was purchased from the local store. The first cut had just been cut and weighed and the yields from Ontario Variegated and Grimm's were the same, being 190 pounds from the plot, and from the other plot it was only 120 pounds. This certainly gives convincing evidence of the value of sowing the best varieties of alfalfa seed."

"We also visited some corn fields in Derby township which had been sown by a syndicate planter. In every case the growers stated that the planter paid for itself the first year by saving labour in cultivation."

GREY COUNTY

H. C. Duff, B.S.A.:—

"Our work in assisting farmers to combat the grasshopper outbreak was extended considerably west of the district in which we had been giving assistance during the previous week. We held one meeting at Berkeley and then made arrangements with a committee to visit the farmers not represented at the meeting. No difficulties were experienced in persuading the farmers to treat their fields. We should like to be able to give an estimate of the number of acres treated, but such is impossible. All the stores in Markdale have sold every pound of bran, Paris green and black strap that they had on hand. What is being used now is coming from Berkeley, Holland Centre and Chatsworth. There are two farmers who treated with a mixture of molasses meal and Paris green. It was their opinion that this mixture could not be improved upon, but we will have definite information later, as the two mixtures are being tried out together. On one farm I attempted to estimate the number of grasshoppers that were killed to the square foot along a fence where they had been particularly plentiful. The task was somewhat difficult owing to the fact that a heavy rain had fallen since the land had been treated. However, there were at least 1,500 and possibly a good many more. It really looked as if the farmer had been trying to fertilize the land with grasshoppers."

THUNDER BAY DISTRICT

G. W. Collins, B.S.A.:—

"On the 22nd of June a special delegation from the Farmers' Clubs, consisting of 14 farmers, met in this office for the

purpose of organizing a farmers' co-operative association. F. C. Hart, B.S.A., Director of the Co-operation and Markets Branch of the Ontario Department of Agriculture, was present to direct the formation of the organization. After considerable discussion on the question of marketing, the meeting decided to organize and that the name of the association shall be the Thunder Bay Co-operative Association, Limited. Mr. Hart was asked to prepare a system of by-laws suitable for the association. The by-laws were dealt with very carefully, clause by clause, and finally were approved by the meeting. The method of raising capital in this association is by the note system. The notes will be placed in the association's bank as collateral. An application committee was appointed to apply to the Provincial Secretary for a charter.

"On July 7th we held a milk testing demonstration at Hymers. We took our Babcock tester and necessary equipment up there for this work and it proved very interesting and successful. Following the demonstration in testing which was given in the evening short course lectures were given on the care and handling of milk on the farm. Previous to this demonstration we sent out instructions regarding the sampling of the milk for testing purposes, and many farmers were there with samples, anxious to find out which cow gave the richest milk. Some of the farmers were disappointed in that their samples tested lower than they expected, while others were pleased to learn that their samples were rich in butter fat; 25 samples were tested, 50 people present."

FRONTENAC COUNTY

C. Main, B.S.A.:—

"I inspected two of the oat plots in the acre profit competition. One interesting feature of this work is the fact that the oats for one of the competitor's plots were treated with formalin for the prevention of smut, while the main crop of oats grown by the competitor's father was sown untreated. The result is that you can scarcely find one head of smut in the plot grown by the son in the competition, while the main crop grown by the father is about one-quarter smut.

"Inspected acre plot of corn, erecting sign stakes designating the seven different varieties on each of the plots. I found the corn to be making favourable growth and the owners are already admitting that they think the hill system is the proper method of planting corn, more particularly if weeds are prevalent.

"I have been doing some work in connection with the control of flies on cattle. Several people have been taking much

interest in this method of control, as it proves to be cheaper and equally efficient with the patent treatment. The treatment is as follows:—

- 1 gallon of sour milk, or slightly sour,
- 1 " " coal oil,
- 1 " " fish oil,
- 6 ounces oil of citronella.

The sour milk and coal oil are mixed together first, then the fish oil and oil of citronella are mixed. Now add the aggregate together and mix thoroughly for ten minutes. This gives the stock solution. Upon using, one part of the stock solution to two parts of water is mixed and sprayed, this spray being applied once a day."

PEEL COUNTY

J. A. Carroll, B.S.A.:—

"We are still placing quite a number of men and the results of our efforts in this connection have been quite satisfactory; between 60 and 70 labourers have been sent out since the middle of June and no doubt we shall continue to supply this help."

NORFOLK COUNTY

Geo. Wilson, B.S.A.:—

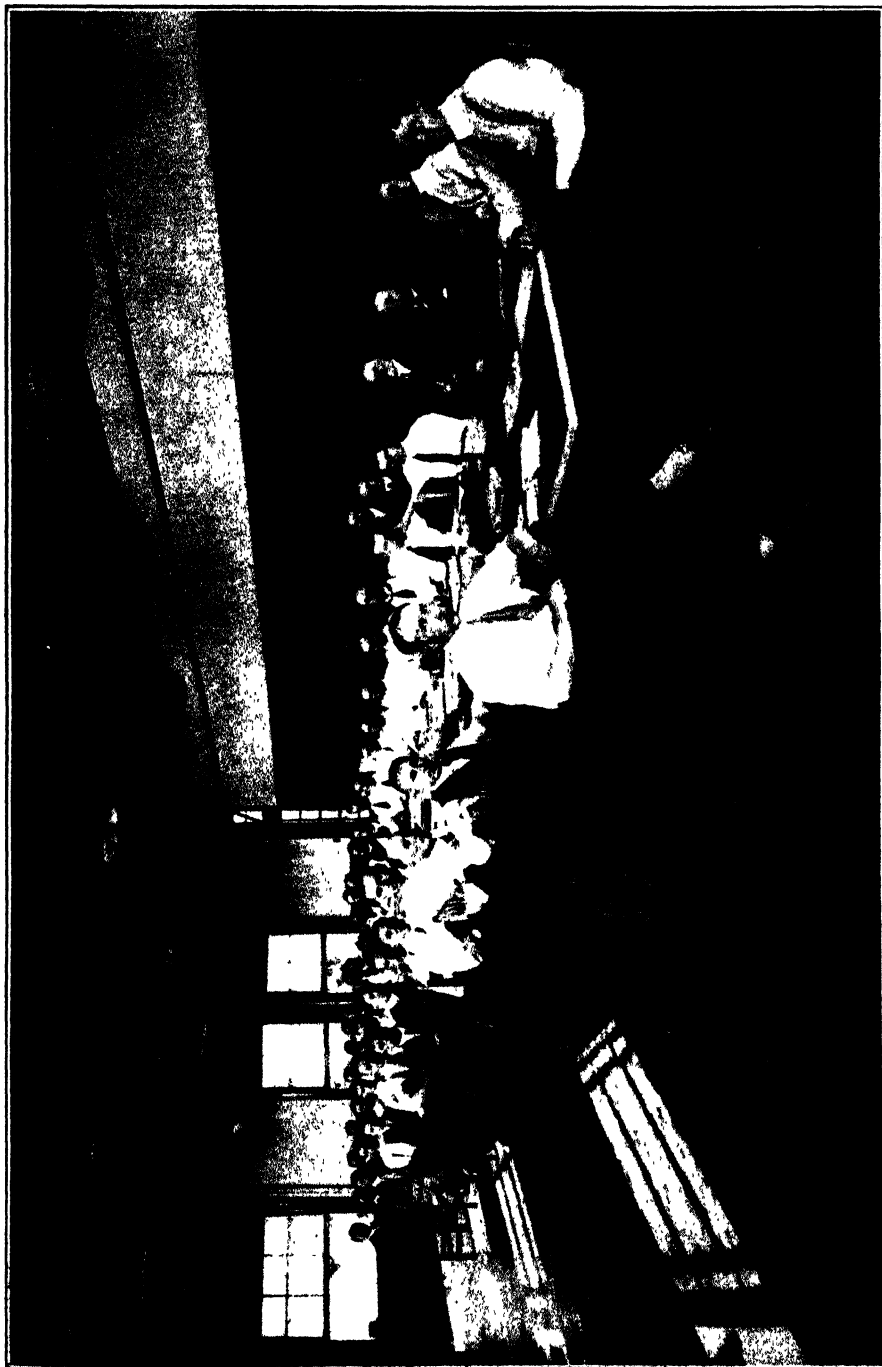
"Hogs entered in the feeding hogs for profit competition were also examined and details concerning the contest discussed with the boys. Most of the boys are weighing the hogs frequently and noting gains from different feeds. It was gratifying to know that the boys who had been supplied with milk testers were keeping accurate record of their cows. One young man, Clayton Mansfield, was found to be keeping accurate accounts of his poultry, the accounts comprising amount and kinds of food fed, number of eggs sold locally, those used in the house and those used for setting. The net receipts were estimated monthly and showed a nice profit.

"I attended the meeting of the Middleton township council to ask for a grant of \$15 to the Rural School fall fair. This was granted and a special prize of \$1.00 for Davies Warrior potatoes grown by the children given by one of the members of the council."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"In visiting one little girl's plot I was surprised to learn of her success with the bred-to-lay chickens which she raised last year. She sold four cockerels last fall at two dollars each and made nearly as much more by selling eggs, along with her prize money at the fair."



DISTRICT REPRESENTATIVE CONFERENCE AT THE ONTARIO AGRICULTURAL COLLEGE, QUELPH, JULY 14 TO 17, 1915,
A REPORT OF WHICH APPEARED IN THE AGRICULTURAL GAZETTE FOR AUGUST

SIMCOE COUNTY

J. Laughland, B.S.A.:—

"One pleasing feature of the school fair work is the fact that so many farmers have splendid small fields of No. 72 Oats grown from seed produced on the pupils' plots last year. Many of these men will have enough seed by next year to sow their whole acreage of oats. Other crops are being multiplied in the same way."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"In regard to the plot inspection for the school fair, both the assistants report much interest on the part of the pupils and what is further they found that the parents were using the product of last year's seed in their field crops. In every case the potatoes, corn and oats were superior to anything that was growing at home. In the Melbourne, Kilmartin and Wardsville district the Wisconsin No. 7 corn which we distributed each year has proven very satisfactory and shown to the people the advisability of securing seed on the cob and having it well matured. In several places they found four and five acres of corn the product of one cob distributed to the pupils last year. In many instances the farmers are looking for the product of the boys' and girls' plots this year to give them a start in good seed for next year. Never before was I so thoroughly impressed with

the need of securing the very best seed for the school fair, and if the school fair is doing nothing else in our county it is laying the foundation for better seed, hence better crops on many of our farms.

"I am pleased to learn of the success Mr. Forsyth had with milk testing demonstration at West McGillivray. The farmers from the other part of the township have also asked for a demonstration and Mr. Forsyth mentioned to me the other day that several of the farmers had already decided to fatten a number of their cows as they were boarders. The milk testing has awakened an interest in that section and shown the people the folly of keeping poor milkers and poor testing cows."

WENTWORTH COUNTY

R. L. Vining, B.S.A.:—

"I have been looking over the corn variety test plots this week, and am much pleased with the showing that these plots are making. Gage Brothers, in Glanford, told me that they were very much disappointed in the appearance of the seed; it was not nearly as good in appearance as some which they obtained from an Essex county grower; but the corn which came up in our plot gave a 100 per cent stand, while they found it necessary to go over the rest of the field and replant it. They agree that \$1.50 a bushel extra for guaranteed corn would be a pretty good investment."

Agriculture is the meeting point of many sciences. So also is home-making. For both scientific education is necessary. And to consider one without the other is to have a one-sided development. It is useless to educate the farm boy to be a better farmer, to apply principles of science and business to farming without a corresponding education of the farm girl in the principles underlying home-making.—*Co-operation in Agriculture.*

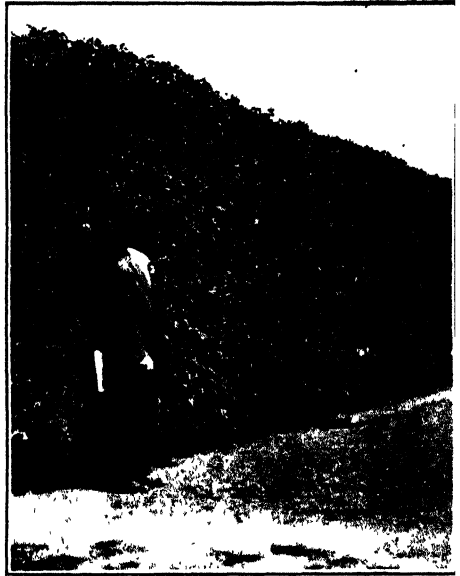
Those farmers and stock raisers who are fortunate enough to have on hand a sufficient supply of breeding animals, especially well-bred cows, to form a basis for future herds, and will provide proper sires, give them all good care and remain steadily in the ranks of live stock producers, will find themselves a few years hence in the foremost ranks of the continent's most prosperous citizens, with their herds and flocks growing in value, their acres growing in fertility, and their bank accounts growing steadily with the combined growth of live stock and increasing crop yields.—*Arthur G. Leonard, President of the Union Stock Yards, Chicago.*

MANITOBA

DISTRICT REPRESENTATIVES AT BRANDON

A portion of one week was spent by the field representatives of the Manitoba Department of Agriculture in visiting the fair at Brandon and the Dominion Experimental Farm there. In addition to six representatives, the party included Mr. S. T. Newton, superintendent of extension service, Manitoba Agricultural College; Prof. T. Harrison, of the field husbandry department, and the Deputy Minister of Agriculture, S. A. Bedford.

Close inspection was made of the different experiments in grain, grasses and live stock which are being conducted on the Brandon experimental farm. The visiting representatives were particularly interested in the different series of rotations under test and impressed with the decided superiority of some of these and the undesirability of others for this province.



CARAGANA HEDGE, EXPERIMENTAL FARM, BRANDON



MANITOBA DISTRICT REPRESENTATIVES INSPECTING BANNER OATS ON EXPERIMENTAL FARM, BRANDON, 1915

While all the crops on the Experimental Farm this year are good, some are exceptionally so and if favourable weather follows, the yield in some instances will be immense.

It is anticipated that this visit of the representatives to the farm will be of direct benefit to them in their work throughout the province, and that the knowledge gained will be disseminated by them.

While together in Brandon a meeting of the representatives was held in a classroom of the Brandon college, a thorough discussion of the extension work taking place. Addresses were given by Mr. Newton, Prof. Harrison and Deputy Minister Bedford, and the district representatives discussed these addresses freely. Much additional work was planned for the coming year.

SASKATCHEWAN

AGRICULTURAL LEGISLATION

AT the session of the Saskatchewan legislature, which closed in June, several measures relating to agriculture were passed. Among these was an act to amend the school grants, and providing that school garden exhibitions may rank as institutes so far as attendance of teachers is concerned in connection with the payment of grants to school districts. It is provided that where in any district the majority of the pupils are in the lower grades, or where a sufficient library is already in existence, the board shall expend the said sum for any other purposes set forth in the regulations of the department in that behalf and shall file with the department a certificate of such expenditure. This means that the sum of ten dollars, for the expenditure of which a certificate must be filed with the department before the grant for the second term is payable, must be spent for some special purpose set forth in the regulations of the department. Those regulations will suggest expenditures of a small sum annually on the improvement of school grounds and buildings and the provision of desirable equipment.

IMPLEMENT SALES

Founded on the report of the commission of inquiry into agricultural

implement sales, an act was passed to be known as the Farm Implement Act, one of the provisions of which is that the implement companies must file with the Minister of Agriculture a price list, which must be adhered to, of all implements and repairs for same which they sell. All of the recommendations of the commissioners noted in THE AGRICULTURAL GAZETTE for August, have been adopted in the contracts regarding warranties, the work which the machine will do and the keeping of repairs. The purchaser of a "large" implement, which means a traction or portable engine, a separator, engine ploughs or discs, finding that any machine does not work satisfactorily, may require the vendor to come and make it perform well, and if he fails to do so the purchaser may reject the machine and receive back all moneys or notes given by him for it, or he may retain the machine and hold the vendor liable for the difference between the value of the machine as it is and the value it would have had if it had fulfilled its warranty, the valuation to be settled by arbitration. Several clauses protecting the purchaser have been included in the contract forms and it is expected that under this Act many of the grievances which farmers have had against the implement companies will disappear.

THE WIFE'S RIGHTS

Under the new Act respecting homesteads, the wife's rights in the homestead which may have been mortgaged for implement debts are protected, and under amendments to the Exemptions Act articles and horses exempt from seizure under that Act may still be selected and kept by the farmer although chattel mortgage has been given upon them. Under amendments to The Land Titles Act no lien upon land contained in any contract for the sale of implements will be valid against the land and no mortgage may be taken upon land to secure implement debts until six months' delivery of the implement. These changes are all in accordance with the recommendations of the commission.

CO-OPERATIVE ASSOCIATIONS

In the Agricultural Co-operative Associations' Act it is provided that in so far as transactions in farm supplies are concerned, an agricultural co-operative association shall, after December 31, 1915, sell only to its shareholders or to the members of the Saskatchewan Grain Growers' Association. Associations will in future be allowed to purchase goods on credit from other agricultural co-operative associations, or from any other company, association or society incorporated by special Act of this province, having objects wholly or in part similar to those of agricultural co-operative associations (which includes the Saskatchewan Grain Growers' Association). Provision is also made that the directors may pledge the credit of the association for moneys temporarily borrowed to pay for goods purchased, or expenses incurred in connection therewith, but a definite provision has been inserted that associations must sell supplies only for cash.

GRAIN GROWERS' ASSOCIATION

Fifteen sections have been added to the Act incorporating the Sas-

katchewan Grain Growers' Association, the effect of which is to generally increase the financial powers of the Association. It is now permitted to act as wholesale purchaser, shipper or dealer in both the products of and the supplies necessary for a farm, and anybody so acting may do anything conducive to this object. It is permitted to pledge its credit according to the methods usually adopted by any commercial company in the ordinary way of business, and in addition it may issue bonds or debentures, the only restriction being that the issue, sale and transfer thereof must be limited to members of the association, to the registered agricultural co-operative associations, to associations having similar objects, and the members and shareholders thereof. Under Section 10 and the amendment to The Agricultural Co-operative Associations Act, the two associations may buy and hold each other's securities, enter conjointly into any enterprise, share profits, lend money to and guarantee the contracts of each other. Section 14 provides that "the liability of members of the association shall be limited to the amount (if any) unpaid for membership fees or unpaid upon any bonds or debentures respectively held by them.

HAIL INSURANCE

The title of The Hail Insurance Act, 1912, has been changed to The Municipal Hail Insurance Act. The Act has been redrafted and simplified in accordance with the experience of the last three years. The date for notice of withdrawal from the scheme has been changed from May 1 to June 1. The withdrawal privileges have been changed and slightly extended. They now include lands of three classes: first, an area equal to one or more quarter sections if completely enclosed in a substantial fence and used for grazing or hay purposes only; second, an unpatented quarter section with less than twenty-

five acres under cultivation, held by entry from the Dominion; third, one or more quarter section with less than twenty-five acres under cultivation, the remainder of which is substantially fenced and used only for grazing or hay purposes.

The penalty of 1 per cent per month after January 1 has been struck out, so that in future the only penalty will be \$1 per quarter section.

The minimum percentage of damage has been reduced from 10 to 5 per cent.

Under an act respecting seed grain, fodder and other relief the Dominion Government is granted the same facilities for securing repayment of sums advanced for relief as were provided for the Government of Saskatchewan under The Act Respecting Seed Grain of 1908. Sums advanced by the Dominion Government may now be made a charge upon

the real property of the person receiving the relief, with interest at 5 per cent and this charge has priority over every other claim against the land, whatever liens, taxes or other incumbrances.

APPROPRIATIONS FOR AGRICULTURE

The following appropriations were made at the recent session of the legislature for agricultural purposes:

Assistance to general agricultural interests	\$73,600
Assistance to live stock industry	20,600
Assistance to dairy and poultry industry	84,600
Publicity and statistical work	22,700
Bacteriological laboratory	8,400
Weed control and game protection	20,900
Bureau of Labour	8,900
Miscellaneous services	17,100
Manual training and domestic science organization	1,800
Agricultural Extension Work	24,000
Total	\$282,600

BETTER FARMING TRAINS

SASKATCHEWAN'S vision to-day is of full granaries and prosperity. A year ago a very considerable part of the province faced crop failure and its accompanying embarrassments. "Wet" years as well as "dry" years in parts of Canada's north-western provinces come unannounced, and the successful farmer is the one who tills his land to conserve moisture in anticipation of a dry or even an average season and in the way which best insures immunity from the effects of an early frost when there occurs more than the usual rainfall. "Luck" comes to the careless farmer only in a year of more than average rainfall, and in the "dry" years his income dwindles to the vanishing point. Frequently, however, the man is sound at heart and only lacks experience, and while experience is considered on competent authority to be the best teacher, her course is long and somewhat expen-

sive. Thus it seems to the thousand and one representatives of urban communities who forsook the counter, workshop or the office for a homestead on the wide Saskatchewan prairie.

PROVINCIAL NEEDS

No one doubts that the people of Saskatchewan as well as the people of Canada as a whole need to have more quarter sections producing wheat and cattle, and eggs and bacon. Our institutions may have been developed more rapidly than the comparatively sparse population of the country warranted. Saskatchewan has more railway mileage per capita than any other Canadian province. Her public roads, her schools, her municipal institutions are in advance of most new countries. And interest payments mature in connection with railway and municipal bonds as well as farm mortgages, and money should

be made—not borrowed—to meet them. Therefore more production is necessary, and more people are wanted. In fact there is still a real immigration problem notwithstanding the great accomplishments of the past. Hon. W. R. Motherwell, Saskatchewan's Minister of Agriculture, regards this problem as good as solved as soon as the present rural population becomes properly installed and shares in the prosperity which will be theirs when they learn to utilize fully the great possibilities of Saskatchewan's soil and climate. In other words

ter farming " train. The first appearance in Saskatchewan of this great aid to agricultural instruction was almost a score of years ago when the "seed selection special" covered the greater part of the railway mileage in the province. This year both the Canadian Pacific and the Canadian Northern Railways provided trains for the use of the Department of Agriculture and the College of Agriculture in carrying to Saskatchewan farmers the information which their investigations have gathered for them. The trains con-



STAFF OF TEACHERS AND DEMONSTRATORS

Left to right—Prof. R. K. Baker, Miss M. Trood, Arthur Fawcett, Miss Jean Archibald, L. E. Kirk, Mrs. L. E. Kirk, F. H. Auld, Prof. G. H. Cutler, Mrs. W. W. Thomson, W. W. Thomson

the best immigration agents are the men who have made good on the farm. Of course it is generally admitted that in addition to the difficulties due to inexperience and arising from the problems incidental to production, there are other natural and artificial handicaps affecting the business of farming, but that is another story.

THE TRAIN

One of the many agencies utilized in Saskatchewan to promote the prosperity of the farmer is the "bet-

sisted of sections devoted to livestock, crop production and household science. There was also a department for the boys and girls, and a play car under the supervision of careful attendants for the entertainment of the little tots while their mothers were enjoying the lectures and demonstrations.

A three hour stop permitted a carefully prepared program of lectures to be given at each point. The "crop production" lectures were given during the first week by W. W. Thomson, B.S.A., director of co-

operative Associations, Regina; Prof. G. H. Cutler, of the Saskatchewan college of agriculture, and T. L. Guild, B.S.A., district representative of the Department of Agriculture, with headquarters at Shaunavon. Mr. Thomson dealt with the various phases of soil cultivation, Prof. Cutler explained the characteristics of the different varieties of field crops, while Mr. Guild identified weeds and described the best methods to eradicate them.

ings. The exhibit of poultry buildings and appliances also attracted a great deal of attention and inquiry. In this car a large supply of bulletins and leaflets covering every phase of agriculture was displayed for free distribution. One of these cars was in charge of Arthur Fawcett of the Saskatchewan Department of Agriculture.

Perhaps no part of the train was more appreciated or better understood than the nursery car, where the



THE POULTRY LECTURES WERE GIVEN IN THE HOUSEHOLD SCIENCE CAR

BOYS' AND GIRLS' SECTION

Mrs. W. W. Thomson of Regina and L. E. Kirk were in charge of the boys' and girls' section. Lectures illustrated by coloured lantern slides describing the birds of Saskatchewan and the insects injurious to garden and field crops proved of great interest to the boys and girls. At many places the programme was supplemented by an illustrated address by Prof. Baker on the housing of poultry and the care necessary for the successful marketing of eggs.

The "farm models" car contained models of farmsteads and farm build-

children under school age played while their parents listened to lectures in the other sections of the train. A generous pile of sand and a long slide, with toys as an entree, provided entertainment for the wee folks. This department was under the direction of Mrs. L. E. Kirk and Miss J. Gillespie.

CONVENIENCES

Each train carried a sleeper and a diner for the accommodation of the lecture staff. The personnel of the lecture staff changed from week to week and during the itinerary a part of the programme was taken by

such well known authorities on agricultural subjects as Dean Rutherford, Professors John Bracken, A. M. Shaw and A. R. Greig; A. F. Mantle, Deputy Minister of Agriculture; J.

Reed, B.S.A., Regina. Hon. W. R. Motherwell, who is convalescing after a serious attack of diphtheria accompanied the trains as much as his strength would permit. Thos. S.

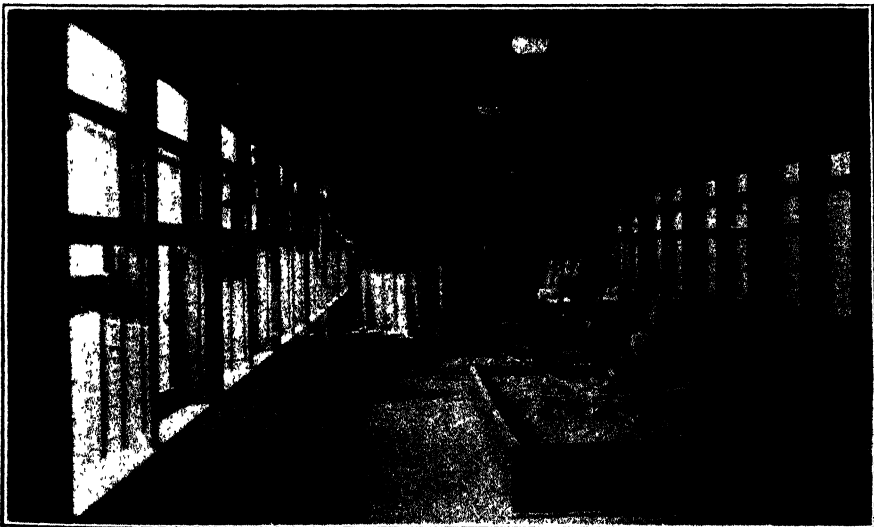


PUPILS OF NINE SCHOOLS IN ATTENDANCE AT INSTOW

C. Smith, Live Stock Commissioner; J. L. Brown, W. Betts, and E. H. Hawthorne, district representatives of the Department of Agriculture; J. A. Mooney, Regina, and F. H.

Acheson, general agricultural agent, represented the C.P.R.

The trains traversed over 2000 miles and were scheduled to stop at 135 stations. As a rule these were



AN END OF THE NURSERY CAR; "BETWEEN STOPS"

points not visited last year, and many of them were sidings with barely the earmarks of villages. The attendance at the first 36 meetings was about

10,000 people and if this record were maintained the total number of persons served by the trains this season was approximately 38,000.

WEED ERADICATION AND OTHER MATTERS

THE provincial Agricultural Department estimated that 15,000 men were required for the harvest. Five thousand were expected to come in from the cities and towns and the railways were relied upon to bring in the remaining 10,000 from the east. Many foreigners were offering their services and the department urged farmers to accept them as the ranks of the British bred in the west have been depleted by the war.

weeds commissioner sent an inspector and the companies provided a gasoline road motor and driver. Section foremen were instructed on the recognition of noxious weeds. A circular letter has also been sent to urban municipalities pointing out the danger incurred from weed-seeds and urging that they be suppressed and samples forwarded to the department. Special attention is directed to the sow thistle, every patch of which that may be found is to be dug out.

It is estimated that from 15 per cent to 60 per cent of injury to crops was caused at Waldheim, Hepburn, Dalmeny, Warman, Young, Venn, Nokomis, Cuper, Lipton, Abernethy and Weyburn by hail on July 22. The damage was covered by insurance to the extent of 75 per cent.

An order has been received by the provincial dairy commissioner for 24 loads of government creamery butter, representing about 600,000 lb.

The Department of Agriculture and the three railway lines in the province have conducted an aggressive campaign against weeds. The

An object of attention at the Regina exhibition was a model in butter of a quick firing gun, with an artilleryman at the breach, made under the direction of Mr. C. Calvert of the dairy branch staff.

SERVING THE EMPIRE

The following members of the staff of the Saskatchewan Department of Agriculture have proven their patriotism by enlisting: Mr. A. F. Mantle, Deputy Minister; Mr. J. C. Smith, Live Stock Commissioner; Mr. H. N. Thompson, Weeds and Seed Commissioner; Mr. A. J. McPhail, Field Agent; Mr. E. H. Hawthorne, Field Agent; Mr. Wm. Betts, District Representative; Mr. J. L. Brown, District Representa-

tive; Mr. W. Waldron, Assistant Secretary of Statistics. Messrs. Mantle, Smith and Betts have already gone into active service, the first named with the rank of captain in the 68th C. E. F., the second with the rank of lieutenant in the same corps, and the third as sergeant in the 3rd Battalion, Princess Pats. Messrs. Thompson, McPhail, Hawthorne, Brown and Waldron expect to leave almost at once.

PURE BRED STOCK SALE

THE Saskatchewan Sheep and Swine Breeders' Associations have decided to hold a joint sale of pure bred males and females, of both classes of stock, at the Exhibition Grounds, Regina, on October 27th.

The following resolutions were passed at a recent meeting of the joint executives of the Sheep and Swine Breeders' Associations and the sale regulations will be changed accordingly:

"Individual entries of sheep will be limited to eight head of males and twelve head of females; and of swine to six head of either or both sexes.

"Sheep classes to be thrown open to breeders of the prairie provinces.

"The name and number of the sire and grandsire of all animals entered in the sale will be asked for on the entry form and will be included in the sale catalogue.

"An upset price of \$20 will be placed on all animals one year old and over; and \$15 on animals under one year."

ALBERTA

EXPERIMENTAL STATION EXHIBIT

THE Lacombe Experimental Farm is making an exhibit that is attracting much attention at the various exhibitions in the Northwest. Included in the exhibit is a model of a stave silo, erected at the station last year. The silo, which was made of 2 inch by 6 inch studs, and which is 30 feet high, cost, roughly, \$100 for material. There is also a collection of small fruits, including red and white currants and strawberries. The black currant "Beauty" on exhibit made a profit of \$300 per acre last year. A special feature of the exhibit is the

forage grasses and crops. The variety of alfalfa on the stand, known as Grimm, last year yielded $1\frac{3}{4}$ tons to the acre. Among other samples are red clover and alsike, both of which do well in Alberta. Grasses on the stand are timothy, brome, western rye grass and Kentucky blue.

There is also an exhibit of noxious weeds common in Alberta. Each mount shows the weed in every stage of development. Another interesting feature is a bee outfit in miniature.

In the August number of THE AGRICULTURAL GAZETTE a typographical error occurred in the article "Two Modern Country School Houses". In the second paragraph of the right hand column on page 805 the following occurs:

"The lighting, heating and ventilation of the classroom are nearly ideal. The windows occupy practically an entire side, running from the ceiling to three and one-half feet above the floor". This should read "two and one-half feet above the floor."

PART III

Rural Science

THE TEACHING OF AGRICULTURE AND WHAT IT SIGNIFIES

BY "OBSERVER" AT RURAL SCIENCE SUMMER SCHOOL

THIS year, at the Ontario Agricultural College, 76 public school teachers and 28 high school science teachers are learning, in the atmosphere of the farm, how to make the activities of rural life a basis of intellectual training for the pupils in country schools.

In past years, only about one-third of those who took the first half of the course came back to complete the second year; this year, fifty per cent have returned.

Why more do not conclude the course and secure their certificates is hard to decide. Perhaps it is that on their return home, filled with enthusiasm, they meet with apathy, or even with opposition, and fail to carry out what they thought they could accomplish. Perhaps the teacher is himself to blame for this. He allows the impression to be conveyed to the parent that he is going to teach the child things about farming that the parent does not understand, instead of directing the child to seek from the parent and bring to the lesson the useful and practical aspects of the subject. On the one hand antagonism is aroused; on the other, a feeling of sympathy and understanding might be created.

The apathy and opposition that exist are no doubt due in the main to a failure to understand the movement and to appreciate its significance. Where opposition exists, it is based seemingly on the assumption

that agriculture is farming, and that farming consists of the proper performance of certain manual operations which the farmer is better qualified to teach his son than the schoolmaster.

Ask parents whether they desire their children to leave the farm, and their reply, generally speaking, will be decidedly in the negative. They have watched with much heart-burning their sons and daughters being drawn to city pursuits, but they have not been brought to realize that in agricultural teaching they have a means under their control that might if properly employed accomplish much to influence their children's inclinations in the other direction.

If the people on the farms can be brought to realize what agricultural teaching stands for, they will demand it. They will require that the child be inclined towards the land by being taught through the things with which he comes daily into practical contact.

THE DESIRED CITIZEN

Let it be understood that the object of this movement is not to teach farming, but to teach for farming and for life on the farm. That it is intended to develop the child's observing, reasoning and enjoying powers through the vital things that touch his daily life, such as plants, soils and animals; to arouse his interest in them rather than in things that relate

to callings other than farming; to train his intelligence through them for the business of farming rather than through subjects that have no relation to it. If the child's interests can be centred in farm life, and if he can be taught to apply his developing powers thereto, it will do more than all else to hold him on the land.

Half the rural schools of Ontario are this year taking part in the school fair movement. Forty-five thousand country boys and girls are more or less interested in thousands of home plots or in raising poultry from the settings of eggs supplied. The children are displaying pride and enthusiasm in the work. Their plots in many cases give a striking example of what good seed and good cultivation will accomplish. While it is perhaps true that the hope of reward is the underlying motive and the one that makes the readiest and strongest appeal, nevertheless the movement presents an opportunity for the teaching of agriculture that has not been fully appreciated. The children's interest has been aroused, the material is there, and they are in the right mood to be instructed. Proper direction is all that is required to make the movement one of much greater value than it will be otherwise.

It is largely this hope of financial reward that has led so many country-bred young people to turn their faces to the city, and has obscured their vision to the fact that the things that count for real happiness are to be had more readily in the country.

WHAT FARMING STANDS FOR

If we are to regard the farm merely as a factory for the manufacture of food, then let us do away with individual ownership, and organise farming as a great industrial enterprise for producing cheap and abundant food, leaving those who till the soil to fall into a condition of serfdom. We believe that the farm and the farm home stands for something far more important than this in the life

of the nation. It stands for the true welfare of the people. It is the real basis for happy, useful and vigorous manhood and womanhood; it is the true home of liberty and equality; it is, in short, the only real basis of a stable civilization; the race that is rooted to the soil shall endure.

Every boy and girl that is retained to the farm is a real gain to the race. Every new-comer who is induced to go on the land, and there to found a home, is of far greater value than one who becomes a mere cog in the industrial machinery of a city.

Is it the purpose to develop in this country a race possessing the qualities that rural life alone can confer, or are these finer things to be sacrificed to the acquirement of wealth? Is the welfare of the race to be paramount, or are we more concerned in building vast fortunes, or in helping others to build them?

If the movement from the land is governed by financial considerations chiefly, then the application of trained intelligence to the business of farming will make it easier to secure a competence from the soil. The first step in that direction is to adopt a system of teaching that will direct the child's attention to and interest him in the things of the country.

To-day, men's minds are being stirred as never before; new aspects and new purposes in life are being discerned. They are beginning to realize, perhaps, that there are things better worth living for and striving for than money and the luxuries and diversions that money secures. The opportunity calls loudly to the teacher, and to all who aspire to rural leadership, to make clear the realities of life—to show that the greatest good will not be found in acquiring wealth, but rather, for country people, in the sane and wholesome activities of country life. Let them make clear what agricultural teaching signifies in the welfare and happiness of the community, and help secure for the movement the whole-hearted support of the people.

CONSOLIDATION OF RURAL SCHOOLS

THE MOVEMENT IN QUEBEC

BY J. C. SUTHERLAND, B.A.

THE school year which closed in June was the first under the new system of special grants from the Government of the Province to aid consolidation of rural Protestant schools. In making these grants, the Government recognized the fact that the Protestant schools are more particularly in need of this plan of concentration. The response of the school boards has not, however, been very marked. There is still a good deal of hesitation about accepting a new system. Part of the aid for the year was given to boards which had already adopted the principle of conveyance. Practically there was only one case of new "complete" consolidation—the word "complete" being used to denote the union of several elementary schools into a model school. In Quebec, of course, the model school corresponds to an advanced public school, doing part of high school work, and therefore well equipped to do good work in agriculture. A considerable amount of ordinary ("partial") consolidation, where the school is not raised to higher rank, is constantly reported by the inspectors. This, in general, is due to economic necessity, and special aid is not asked for as the saving in salaries pays for the conveyance of the few pupils requiring it.

The sentence above with regard to the "response of the school boards" needs some modification. A number of them are anxious and willing to adopt the system, and recognise that there is no alternative in many municipalities, but their hands are tied too often by the opposition of the districts. The attachment to a wretched school-

house, attended frequently by only half a dozen pupils, is inexplicable on reasonable grounds when conveyance to a good, well-equipped and well taught school is possible, but it is a condition which progressive boards have to meet constantly, and which they find difficult to overcome. Constant public education on the question is still required. The strongest incentive to consolidation should be the realization of the fact that it affords the opportunity of giving a better and broader education than the one-roomed school possibly can give, but too often, apparently, this higher ideal is not grasped.

In the July, 1914, number of THE AGRICULTURAL GAZETTE I pointed out one advantage that Quebec possesses in the matter of bringing about consolidation, namely, that the school municipality in this Province is a large unit, usually embracing a whole township, with anywhere from two to twenty or more schools under the one board. This advantage may sometimes work disadvantageously, however, as the following illustration will show. Two years ago partial consolidation was adopted in a certain municipality in the Eastern Townships. Two schools were closed, and the pupils conveyed to a third in a village centre. Apparently the experiment was most successful. The inspector was able to report that the average attendance from the two closed districts was greatly improved. The pupils enjoyed the ride to school, and went far more regularly than when the schools were at their own doors. But at the end of the second year (last June), opposition to the plan arose. The chief ground of the

opposition was that "it was costing more" than under the old system, and the ratepayers had the "proofs" in their school tax bills. As a matter of fact the plan had not cost anything more than the old system. The saving in two salaries had paid for the conveyance. But the school board had increased the tax rate from 35 cents to 50 cents on the hundred dollars, not on account of the consolidation, but to meet increased expenditure, in teachers' salaries, etc., all over the municipality.

At the time of writing (July) several new complete consolidations are expected to be in operation in September. One of these will receive

special aid from the Hon. Sydney Fisher, who is anxious that the experiment may begin with the adoption of nature study teaching and elementary agriculture by a trained teacher of those subjects. The Hon. Mr. Fisher is the chairman of a sub-committee of the Protestant Committee dealing with the question of extending the work on these lines in the rural schools.

The Department continues steadily to encourage the consolidation movement, and if nothing spectacular can be announced at the present time in this direction, there is, at least, the promise of steadily awakening interest in the subject.

LITTLE PROGRESS IN ONTARIO

IN respect to consolidation of rural schools, this movement has made, as yet, little progress in Ontario. There are only two consolidated schools in the province, that at Guelph established originally through the generosity of Sir William Macdonald, and not in itself, from the economical standpoint, a good illustration of how school sections may

be combined to advantage, and the other at Hudson in New Ontario, where one school is made to serve a large area. The latter is not sufficiently well established to serve for purposes of illustration and comparison. The school laws contain provisions by which rural school boards may combine. But thus far, no progress of moment has been made.

THE NEW AGRICULTURAL SCHOOL AT SUSSEX, N.B.

THE new agricultural school at Sussex, N.B., was formally opened and dedicated on the 15th of July. The Hon. J. A. Murray, Minister of Agriculture, presided, and had on the platform with him, His Honor Lieutenant Governor Wood, Premier Hon. Geo. J. Clark, Provincial Secretary-Treasurer, Hon. Dr. D. V. Landry, Attorney General, Hon. J. B. M. Baxter, the Mayor of Sussex and other officials, educational and agricultural.

One hundred and fifty school teachers and school inspectors were in the audience, they having come primarily to spend four weeks at the summer school of science, which opened in the new building on July 14th.

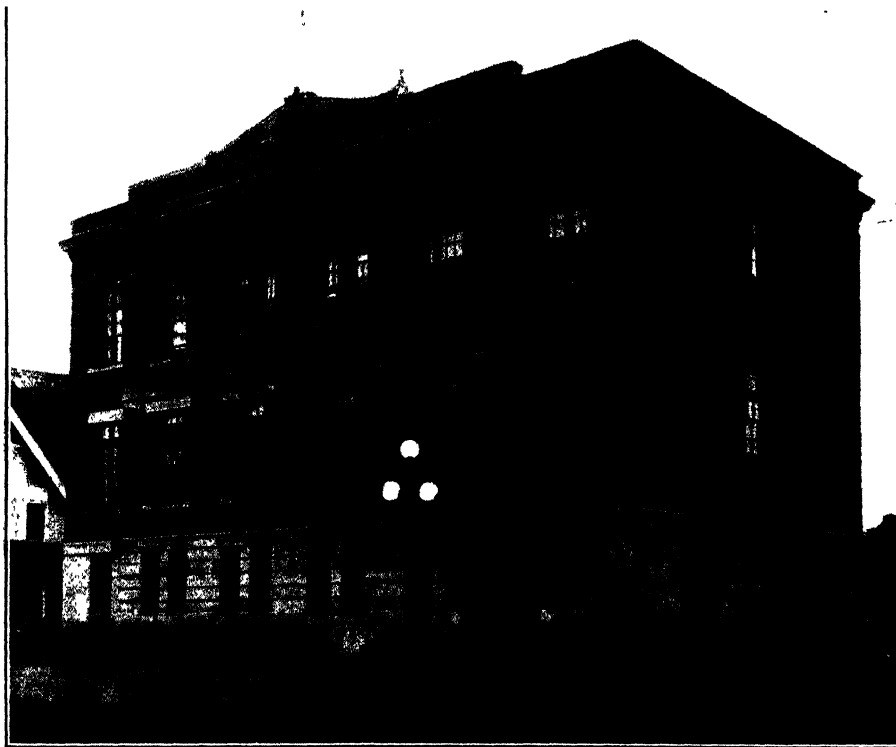
The Provincial Minister of Agriculture, in opening the proceedings, gave credit to the Dominion Government for the opportunity it afforded the province to construct and equip an agricultural school such as that which was now to be formally opened.

The new building includes in the basement a stock-judging pavilion, boiler room and lavatory. On the first floor there are offices and an assembly room, and on the second floor a chemical laboratory, biological laboratory and school room for chemicals, etc. (Plans of the different floors were published in THE AGRICULTURAL GAZETTE for September, 1914, on pages 710 and 711.)

His Honor, the Lieutenant-Gov-

lated the province and the town of Sussex on the completion in the chain of agricultural schools which had been planned for New Brunswick. Having referred to the "patriotism and production campaign," he said that the co-operation of every Canadian farmer would probably be needed to produce food before the termination of the war.

Dr. D. V. Landry, Provincial Secretary, in congratulating the pro-



NEW AGRICULTURAL SCHOOL, SUSSEX, N.B.

ernor, in declaring the building opened for the purposes intended, said that an agricultural education will not teach a man how to farm without work. It would teach him how to make the best use of his industry and energy. He congratulated the province upon having so useful a building dedicated to its purpose.

After the Mayor had welcomed the visitors the premier congratu-

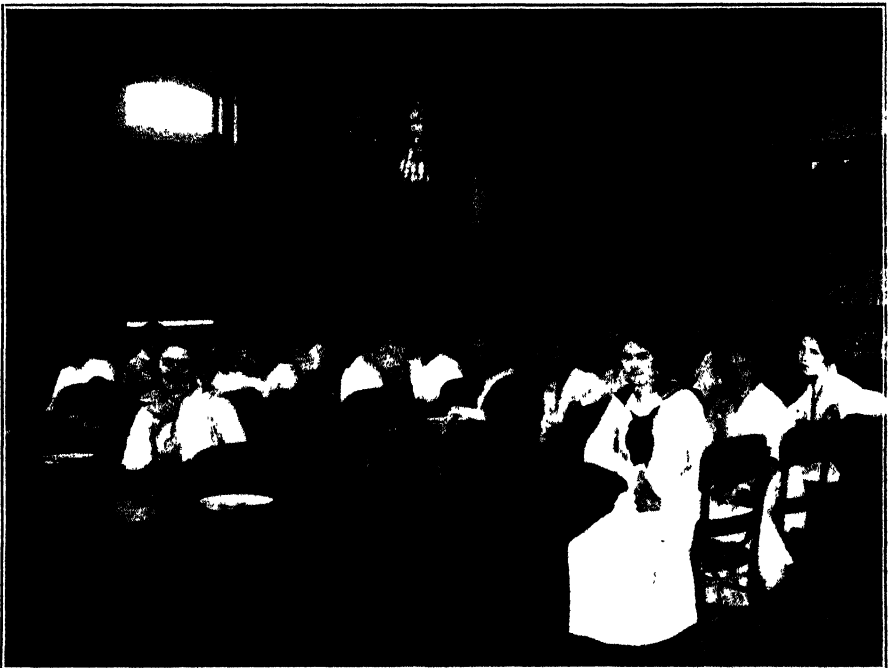
vince upon the dedication of such a building, expressed the hope that they would soon see a similar school erected on the north shore. The farmer needs to have just as good an education for his calling as lawyers and doctors have for theirs.

After Attorney General Baxter had paid a fitting tribute to the loyal class of farmers who first settled in the county of Kings, Prof. M. Cumming, Secretary for Agriculture,

Truro, N.S., conveyed the greetings of the farmers of the province of Nova Scotia to those of the sister province of New Brunswick. Ten years ago he stood in practically the same position in relation to the Nova Scotia agricultural college as now does Prof. Newton to the Sussex agricultural school. In Nova Scotia they were then on the threshold of a forward movement in agricultural education. Their college had been built and the chief criticism was:

would repeat itself in this respect in regard to the new agricultural school in Sussex. He also urged the teachers present to do their utmost for the advancement of agricultural education. If citizens followed the right kind of thought in regard to the agricultural schools of the province, the institution would not fail to accomplish the purposes for which it had been erected.

Prof. Pettitt, of the Ontario agricultural college, extended the greet-



RURAL SCIENCE CLASS IN BIOLOGICAL LABORATORY, NEW AGRICULTURAL SCHOOL, SUSSEX, N.B.

"It is too large. It can never be filled to its capacity." This prediction did not hold true. In the course of a few years, the attendance and requirements for extension justified the building of an additional section to the college building. Since then, one building after another has been erected, until at the present time there are several buildings used for instruction purposes, any one of which is as capacious as the building first erected. Prof. Cumming trusted that history

ings of the farmers of his province and their college staff. He spoke of the spirit of co-operation that the farmers of Ontario displayed towards their District Representatives. He described the work as carried on in the Ontario Agricultural college at Guelph, and trusted the new school would have equal success.

Other speeches were delivered by educational officials, all of whom laid stress upon the value of practical teaching.

MANITOBA

SHORT COURSE FOR CLERGYMEN

THE short course and conference in agriculture and rural sociology held at the Manitoba Agricultural College was highly successful, and marks an advance in rural progress. There were probably one hundred and twenty ministers present—representing five different denominations; of the one hundred and seven who registered 43 were Presbyterian, 33 Methodist, 13 Catholic, 9 Anglican, and 9 Baptist.

until a request should come from the clergymen themselves. This difficulty was overcome when last autumn the Presbyterian Synod of Manitoba appointed a committee to confer with President Black and any committees from other denominations, to consider holding a rural conference on rural problems during the summer.

The response of the various denominations was hearty, and with their co-operation the present course



COUNTRY CLERGYMEN ATTENDING SHORT COURSE, MANITOBA AGRICULTURAL COLLEGE, AUGUST 2 TO 6, 1915

Almost every agricultural section of the province was represented, as well as some parts of Eastern Saskatchewan and New Ontario.

For more than a year President Black had been considering the holding of such a course, but did not think it expedient to undertake it

was planned and carried out.

The aim of the course throughout was to provide a better understanding of the problems affecting the progress of agriculture and to create greater interest in the improvement of conditions affecting country life. About half the programme was given

over to agricultural subjects, such as:—

The Relation of Dairying to Permanent Agriculture.
The Inter-relation of Plants (illustrated).
Selection of Road Horses.
Poultry Raising for Profit.
Field Problems of the Farm.
Live Stock Raising in Relation to Rural Prosperity.
Laws Governing the Plant Kingdom.
Controlling Destructive Insects.
Examination of College Demonstration Plots.
College Extension Service and Country Life.
Bacteriology of Milk.
Some Principles Underlying Successful Dairying.
The Functions of the Air and Soil in Plant and Animal Production.
Good Roads and Community Progress.
Demonstration on Soil Management.
Protection of Farm Buildings from Lightning.

NEIGHBOURHOOD PROBLEMS

The remainder of the time was devoted to the consideration of the problems of the rural neighbourhood, the country school and the country church, and included the following subjects:—

Beautifying Home and Church Grounds.
Relation of Bacteria to the Health of the Country Home.
Modern Conveniences for the Country Home.
Rural Co-operation.
Rural Survey—What it is and why conduct it.
Community Service.
Rural Communities' Contribution to National Life.
The Rural Problem, its Development and Urgency.
Country Life and National Problems.
Overcoming Rural Isolations.
The Rural Social Institutions.
The Teacher and the Community.
Educational Problems of Rural Communities.
Education for Rural Need or Rural Adjustment.
Clergymen's Problems in the Country Districts.
The Church Brotherhood.
The Church the Crown of Country Life.
The Ideal Church.

The agricultural subjects were dealt with by members of the college staff. The outside speakers included:

Dr. J. W. Robertson, chairman, technical education and industrial training commission, Canada; Rev. Canon Jeffrey, secretary of the diocese of Rupert's Land; Rev. Dr. J. G. Shearer, superintendent of the department of social service and evangelism of the Presbyterian church in Canada; Rev. Dr. T. Albert Moore, secretary department of social service and evangelism of the Methodist church in Canada; Rev. Dr. H. P. Whidden, principal Brandon College; Professor J. H. Gillette, head of the department of sociology, University of North Dakota (author of "Constructive Rural Sociology"); Rev. J. S. Woodsworth, secretary Canadian Welfare League; Rev. W. A. Riddell, director of rural surveys in the Swan River and Turtle Mountain districts of Manitoba; Rev. George A. Dorey, of Abernethy, Sask.; Mr. R. C. Henders, president Manitoba Grain Growers' Association; Mr. C. K. Newcombe, superintendent of education for Manitoba; Mr. A. McGillivray, provincial highway commissioner, Manitoba.

OF HISTORICAL SIGNIFICANCE

To even the casual observer it was apparent at the various meetings that more than ordinary interest and appreciation was shown by the ministers in attendance. The course was a new thing. Some may have been a little sceptical before coming, but the first session was sufficient to make it clear that they were attending no ordinary meeting of their brethren but a gathering of historic significance pregnant with possibility for the upbuilding of a healthy satisfying community life in the country.

Most of the outstanding religious leaders of rural Manitoba were present—practical men who are facing present-day problems in the country.

These men realizing the significance of the whole movement soon became enthusiastic. Intense appreciation was shown of the more technical lectures given by members of

the college staff. Such remarks were common:—"The college professors certainly know how to make their lectures interesting," "I have just enjoyed it," "The finest holiday I have ever had in my life," "Mistake I missed the first day," "It is much better than a meeting of Synod," "Finest opportunity for us to get together and remove our prejudices," "Best thing I have attended, it brings the ministers of the different denominations together on a common platform of community uplift."

Spiritual values were not sacrificed. Indeed the atmosphere of the whole course was deeply religious. As one minister expressed it: "It has been a week of deep religious feeling and great spiritual value; the year will be greater because of the influence here."

APPRECIATIVE RESOLUTION

After the following resolution had been read, President and Mrs. Black were presented with a silver service as a small token of appreciation:

"We who are attending the Short Course and Conference on Agriculture and Rural Sociology, planned for clergymen identified with rural service, wish to express our sense of the great debt we owe to President Black for providing this opportunity of considering, under expert guidance, the many important problems relating to rural life in which the college and the men of the church are mutually interested.

"Not only do we appreciate the gracious and generous provision for our comfort as guests of the College and the Department of Agriculture, but we recognize also the wide horizons of the President and his staff in the range and importance of the subjects discussed during the sessions of the Course, and we have been brought to admire the technical skill and human interest manifested by President Black and his staff of

professors in the presentation of the various subjects touching the life and work of the people in rural communities. We also value the service rendered us in bringing to the Conference Dr. J. W. Robertson, distinguished in educational service, and the other able speakers who have dealt with matters in which they have special knowledge.

"We desire to thank the railways for their courtesy in granting special rates to the ministers attending the sessions.

"We note with great satisfaction the announcement of the President that he is prepared to arrange for a similar course next year, and to welcome the wives of the men attending, with arrangement of such topics as relate to this life and service. We earnestly hope that this will be effected.

"If found feasible, we should be glad if the report of the lectures and addresses delivered at the Conference might be printed and thus placed at the disposal of other clergymen who have not been able to attend.

"We appreciate this opportunity of knowing at first hand the splendid work that is being done in agricultural education in our province and the fine equipment of plant, but still more to be assured of the high ideals of the faculty, and the potent influence that must make for worthy character and effective life service in the young men and women who have the privilege of studying here."

The present short course is the first of its kind held in Canada, prepared exclusively for clergymen. It has been successful, not only in giving an enlarged conception of the ideal country community, but in showing other social forces and agencies which may be drawn upon and used for community betterment. This getting of the ministers of the various denominations to look at life together, and to community life as a whole, shows new possibilities of the leadership of the church and means much for rural progress.

The fifty-second annual meeting of the Entomological Society of Ontario will be held in Ottawa on November 4th and 5th, 1915. Dr. L. O. Howard, Chief of the Bureau of Entomology, United States Department of Agriculture, has consented to give the annual public lecture on Thursday, November 4th. Mr. Arthur Gibson, Entomological Branch, Department of Agriculture, Ottawa, is acting as local secretary for the meeting.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

SECOND HONOUR ROLL, DOMINION DEPARTMENT OF AGRICULTURE

LIVE STOCK BRANCH

H. V. BENT, Assistant in the Sheep & Goat Division, went as private in the 2nd University Company with the Princess Patricia's.

SEED BRANCH

H. L. KEEGAN, B.S.A., District Officer, provinces of Alberta and British Columbia.

ALFRED EASTHAM, B.S.A., Chief seed analyst.

ENTOMOLOGICAL BRANCH

H. F. HUDSON, B.S.A.

H. S. BRODIE.

EXPERIMENTAL FARM

VICTOR ARMSTRONG.

E. N. SANSOM.

J. CURZON.

S. STANDING.

E. MASON.

HEALTH OF ANIMALS BRANCH

CONTAGIOUS DISEASES DIVISION

D. S. TAMBLYN, D.V.S.

B. R. POOLE, V.S.

G. COUSINS.

S. METZE.

H. C. EVANS.

G. H. UNWIN.

GEO. S. THORNEWILL, V.S.

J. T. M. HUGHES, M.R.C.V.S.

R. W. MACDONALD, V.S.

J. J. FARRELL, V.S.

A. E. CAMERON, V.S.

C. MACONACHIE, V.S.

A. WATSON, V.S.

MEAT INSPECTION DIVISION

O. BRUNET, M.V.

SCHOOL CONSOLIDATION IN THE SOUTH

The following reasons for the consolidation of schools were given by N. R. Baker at the annual meeting of the Southern Educational Association:

1. The schools can be graded better because there are not so many grades to each teacher.

2. Better teachers can be secured for well-graded schools, because the teacher feels that she can do better work in a few grades than in many.

3. It makes it possible to support high-school grades and thus serve the secondary educational interests of the community, resulting in keeping pupils in school longer and in keeping them under the home roof.

4. It makes it possible to teach such cultural subjects as music and drawing.

5. It makes it possible to teach vocational subjects, such as cooking, sewing, agriculture and bench woodwork.

6. It makes it possible to devote more time to reading, language, spelling and writing, the just now neglected subjects.

7. It results in longer terms and more regular attendance.

8. It enlarges the community, gives wider social contact, and broadens the horizon of every individual.

9. It fosters lyceums, literary societies, debating societies, reading circles, libraries, athletic sports, agricultural clubs and other vitalizing agencies.

10. It results in better equipment for the building and grounds, greater safety and better health for the pupils, and greater real economy for the patrons.

11. It makes the country school equally attractive with the town school.

12. It becomes a social and civic centre.

13. It is not so easily susceptible to the fluctuations of population.

14. It encourages good roads.

15. It is more easily supervised by officials and yields more readily to effective supervision.

HACKNEY REGISTRATION RULES

AT a general meeting of the Canadian Hackney Horse Society held in Toronto on August 2nd, Section 1, Article 14, of the Rules of Entry were amended to read as follows:

The pedigrees of the following animals may be admitted to registry.

- (1) Bred in Great Britain or Ireland.
 - (a) A stallion or mare recorded in the English Hackney Stud Book.
- (2) Bred in Canada.
 - (a) A stallion or mare by a sire and out of a dam recorded in the Canadian Hackney Stud Book, with the exception of the produce of mares recorded in the Canadian Hackney Stud Book as founda-

tion stock or the stallion produce of mares recorded in the Canadian Hackney Stud Book as half registered.

- (b) A mare by a sire recorded in the Canadian Hackney Stud Book provided her dam is by sire recorded in the Canadian Hackney Stud Book.
- (c) A mare by a sire recorded in the Canadian Hackney Stud Book provided her dam is a Thoroughbred mare recorded in the Canadian Thoroughbred Stud Book.
- (d) The stallion produce of mares recorded under Clause C. are not eligible for registration.

REGISTRATIONS TO AUGUST, 1915

THE number of pedigrees of cattle and horses registered with the Canadian National Live Stock Records from the inception of the system to August this year were:

CATTLE

Shorthorn	215,715
Ayrshire	54,178
Hereford	18,480
Jersey	6,051
Galloway	2,150
Aberdeen Angus	9,526
Guernsey	966
French Canadian	3,601
Red Polled	2,188

HORSES

Clydesdale	52,681
Shire	2,272
Hackney	1,887
French Canadian	1,581
Percheron	9,383
Belgian	839
Standard Bred	1,861
Thoroughbred	1,824
Pony	991
Suffolk Punch	347
French Coach	104

The total number of swine recorded up to August this year was 134,569 and of sheep 131,564.

DOG RECORDS NATIONALIZED

A circular has been issued from the office of the National Live Stock Records stating that the Canadian Kennel Club has been incorporated under the Live Stock Pedigree Act, and that now pedigrees of dogs will be recorded and kept under the same system as all forms of live stock. Members are accordingly notified that henceforth they must send their pedigrees for registration to the Accountant of the Canadian National Live Stock Records, Ottawa, who will furnish all the information required.

Dogs from the United States or Great Britain must be registered with the American Kennel Club or the English Kennel Club before they can be recorded in the Canadian Kennel Club stud book.

Foreign certificates of registration should be forwarded to the office of the Accountant, Ottawa, and import certificates secured thereon presented to the Customs officer where application for free entry is made.

Animals exported to the United States will enter that country free on export certificate issued from the office of the Canadian National Live Stock Records after dogs are recorded in the Canadian Kennel Club Stud Book in the name of the American purchaser.

The membership fee to the end of December, 1916, from September 1st, this year is four dollars, a change having been made in the fiscal year to meet the requirements of the Records board.

FREE ENTRY OF DOGS TO UNITED STATES

A bulletin issued by the Bureau of Animal Industry at Washington, D.C., gives the following as the conditions under which dogs can be admitted to the United States free of duty:

First, the dog must be registered in a recognized foreign club, and the pedigree of the dog obtained.

Second, the pedigree of the dog must then be stamped—that is, certified to—by the secretary of the above mentioned club, and certificate of registration of this dog in the club must also be obtained from the secretary of the club.

Third, a vendor's certificate must also be

obtained from the seller of the dog or his agents, which shall give the name and registration number of each dog sold to the importer, the date of sale, place of purchase, and the name and address in the States of the purchaser. Blanks for this certificate may be obtained from the custodian of The Foreign Book of Record in Washington, or a suitable form can generally be obtained from one of the American Express companies doing business in Europe.

Fourth, a bill of sale, showing price paid for the dog, must also be obtained from the seller.

THE VOICE OF THE OPTIMIST

THOUGH Maine's hay has been washed away or rotted where cocked, her grain lodged, her apples beaten from the boughs, her vegetables rotting in the ground, her potatoes running to tops, her corn destined for the silo, her blueberries under water and her sardines uncontracted for, yet she is not discouraged, and rejoices in the news sent out by the federal crop reporters, that "three billion bushels of corn, one and a half billion bushels of oats and a billion bushels of wheat are in prospect for this year's American harvest." That "record crops of rye, white and sweet potatoes, tobacco, rice and hay also are predicted for the prosperous farmers, who have planted 310,546,000 acres, 10,000,000 acres more than last year to their principal products."

That "the wheat crop, the greatest ever grown in any country, will be worth more than \$1,000,000,000, while corn crop value may reach \$2,500,000,000." That "estimates of the principal crops, announced today by the Department of Agriculture, based on conditions of August 1, show that all crops will be greater than last year. Wheat and corn showed improvement over July conditions, though excessive rains and cold weather in the central states interfered with threshing." That "corn prospects increased almost 100,000,000 bushels." That "white potatoes promise to exceed their former record production by 103,000,000 bushels, and sweet potatoes by 4,000,000 bushels."—*The Maine Farmer.*

EXTENSION WORK IN THE UNITED STATES

AT the twenty-eighth convention of the American Agricultural Colleges and Experimental Stations held at Washington, D.C., a full report of which has recently been issued in book form, a deal of valuable information was given regarding the work accomplished under the Smith-Lever Bill which, in the United States, corresponds in large measure to THE AGRICULTURAL INSTRUCTION ACT in Canada. Primarily it was shown that by its aid the extension work of the various agricultural colleges had been greatly developed. Mr. A. C. True, Chairman of the States' Relations Committee and Dean of the Missouri College of Agriculture in the first instance, explained the operation of the Act. He said, that it provided prac-

tically in the colleges a division of service for extension work corresponding to the service for research which is called an Experiment Station. The Department in its turn undertakes to bring all its extension work under the administrative direction of a single organization, and for that purpose has created the States' Relations Committee. The work of the different Bureaus of the Agricultural Department, which involves extension, has to be considered and passed upon by the States' Relations Committee before any arrangements are definitely made with any State College; and when these arrangements are to be made, it is understood that the initial steps shall be taken through the Committee and the Director, or other

duly accredited officer, in charge of the extension service of the College. At present forty-five of the colleges have entered into this broad co-operative arrangement.

EFFICIENCY PROMOTED

Mr. A. M. Soule, President of the Georgia State College of Agriculture and Director of the Extension Department, delivered a comprehensive address in which he went over the entire work under the Smith-Lever Act, the progress that had been made and the results that had been so far reached. He explained that the Smith-Lever Extension Act provided liberal maintenance for extension work, but the availability of these funds is predicated on the state's duplicating the same. If the state does not readily meet the federal appropriations, funds can be secured from the county through the commissioners or county Board of Education. Funds can also be obtained through boards of trade, chambers of commerce, farmers' organizations, corporations and individuals. Fifty thousand dollars has been contributed in Georgia for several years past by various local agencies for the maintenance of the field work of the extension division. This gives some idea of the response the people are ready to make.

Mr. Soule stated that there was now quite a large and efficient extension staff organized. Sixty-four supervising and county agents are employed in the State of Georgia, and forty-two canning club agents. The state has thirty-five specialists in various lines. Demonstrations were successfully carried on last year on 5,000 farms. There are 10,000 members of the boys' corn clubs, 3,500 members of the canning clubs, and 1,000 members of the pig clubs. The result of the effective work is seen in a wonderful increase of corn growing, which amounts on a monetary basis alone to \$30,000,000 annually. As evidence of the way the work was appreciated by the lads themselves, Mr. Soule quoted a case of one of the members of the boys' poultry clubs, saying in his report, "I made \$21.25 off my chickens last year, but I obtained \$500 worth of information and experience and had a \$1,000 worth of pleasure." Turning energy into profitable channels, teaching fundamental knowledge and changing work into play, means a development of head, hand and heart and soul of which there is reason to be proud.

GENERAL IMPROVEMENT

Extension work, Mr. Soule continued, properly organized, will tend to right conditions on the farm and in the home, and will bring inspiration and encouragement where dejection, and sometimes despair and failure, have been enthroned

too long. It will give constructive purpose to the minds of many people. It will result in the development of a more permanent type of agriculture through making available to the farm and the farm home the wonderful stores of knowledge which scientific research has created, but which have so long remained in cold storage for want of some efficient method of distribution. While great economic changes will result from the establishment of this work, it is clear, as the reports of adult farmers and boys and girls amply demonstrate, that it builds up the body and mind, gives definiteness of purpose to life and brings into the consciousness of all a recognition of the new power which they may possess and enjoy through the exercise of more intelligent methods of practice. Best of all, it builds healthy bodies and strong, purposeful souls with a broad vision and belief in their own powers of accomplishment which was not always resident there. It demonstrates, as it was intended, that farm work may be easily transformed from the realm of an unwelcome task to the pleasurable fields of profit, valuable experience and enjoyable recreation.

TEACHERS' QUALIFICATIONS

Mr. J. M. Hamilton, President of the Montana State College of Agriculture, referred to the qualifications required of teachers of agriculture. He said that it required something more than an agricultural training to make a good teacher of agriculture. In the first place, the candidate for the position of agricultural teacher should have been reared in the country—preferably on a well-conducted farm. This alone can give him the right point of view and the sympathetic attitude toward the farmer and the farm home. Such a person will know rural problems at first hand. No amount of veneer put on in the city can take the place of country life experience. In no other way can the teacher understand the farmer's point of view and his attitude of mind toward manufacturers, great transportation companies and the Government. Of course a teacher of agriculture must have a thorough knowledge of agricultural science and the best agricultural practice. This must be acquired in an agricultural college, but he must also know how to impart such knowledge according to the most approved and efficient methods of pedagogy. He must understand psychology and the principles of teaching. One of the great tasks that the agricultural college has to assume is that of providing efficient agricultural teachers.

CONSOLIDATED SCHOOLS

Mr. G. E. Vincent, President of the Minnesota State College of Agriculture,

referred to the organization of the consolidated schools. He said, that they must have teachers' houses in their immediate proximity. He thought that the point should soon be arrived at when no consolidated rural school would be built without a house being provided for the janitor and his wife, the latter of whom must be a good cook. Here it would be possible for the teachers to have heat and light, for most of these consolidated rural schools must have heating and lighting plants. Here the teachers could live in small congenial groups under comfortable conditions. Here again teachers of House-

hold Economics and Agriculture and Manual Training who come from the college of agriculture would be able to adapt themselves to the help of those who are actually giving the normal instruction. In his state approximately 2,000 rural teachers were brought by the summer schools into contact with people who represent the higher ideas and ideals.

Many other prominent men present at the Convention testified to the splendid work that the Smith-Lever Bill, like THE AGRICULTURAL INSTRUCTION ACT of Canada, had made possible.

AGRICULTURAL WORK FOR WOMEN

THE Labour Exchange Department of the Board of Trade of Great Britain have issued the following notes on agricultural work and training for women:

Women are needed for agricultural work, especially in the following branches:—

- (1) Milking and dairy work.
- (2) Care of cattle, pigs and poultry.
- (3) Field and market garden work, e.g., potato planting, weeding, thinning, hop-tying.

For milking and dairy work a course of training is necessary if the worker is to be in a position to command nearly full wages from the commencement. In the other branches useful work of some value from the wage-earning point of view can be rendered from the beginning, and experience may be rapidly acquired as a result of working under supervision for a short time.

There are a few agricultural colleges and limited number of private farms where a short course of training can be obtained on payment of a fee. The cost is usually about £1 per week for instruction, board and lodging.

In many counties there are travelling dairy schools which provide short courses of instruction, usually extending over about ten days, while a few county education authorities are now arranging special short courses of training with a view to preparing women for light farm work. Information in regard to these schools and courses can be obtained from the county education secretaries.

The Board of Agriculture and Fisheries have arranged for a strictly limited number of courses of training extending over two to four weeks, to be given at certain agricultural colleges. In these courses maintenance is provided and no cost is involved for the women under training.

The Board of Agriculture and Fisheries have stated that 12s. to 15s. a week may be considered an average wage for women in agricultural work under present conditions.

Applicants for agricultural work are reminded that the hours are necessarily long, and certain parts of the work must be done in the early hours of the morning, and on Sundays.

A strong physique is considered essential.

The apple-picking law recently passed by the New York state legislature requires that all barrels of apples be properly marked as to the quality of the contents before they can be sold in storage.

LIST OF SUGGESTED BOOKS FOR FARMERS' LIBRARIES RECOMMENDED BY THE AGRICULTURAL COLLEGES OF CANADA

ANIMAL HUSBANDRY

- "Farm Live Stock of Great Britain." By Wallace. Published by Oliver & Boyd, London. \$2.00.
- "Types and Breeds of Farm Animals." By Plumb. Published by Ginn & Co., New York.
- "Principles of Breeding." By Davenport. Published by Ginn & Co., New York.
- *"Breeding Farm Animals." By Marshall. Published by Sanders Publishing Co., Chicago. \$2.50.
- "Cattle Breeding." By Warfield. Published by Sanders Publishing Co., Chicago.
- "Animal Breeding." By Shaw. Published by Orange Judd Co., New York.
- "Stock Breeding." By Miles. Published by Appleton & Co., New York.
- "Principles of Stock Breeding." By Wilson. Published by Vinton Co., London.
- "Manual of Farm Animals." By Harper. Published by Macmillan Co., Toronto.
- "Animal Husbandry for Schools." By Harper. Published by Macmillan Co., Toronto.
- *"Judging Live Stock." By Craig. Published by Kenyon Printing Co., Des Moines, Iowa. \$1.25.
- "Feeds and Feeding." By Henry. Published by Author, Madison, Wis. \$1.90.
- "Profitable Stock Feeding." By Smith. Published by Author, Lincoln, Neb.
- "Diseases of Cattle." Published by United States Department of Agriculture.
- "Diseases of Horses." Published by United States Department of Agriculture.
- "Diseases of Swine." By Craig. Published by Orange Judd Co., New York.
- *"The Farmer's Veterinarian." By Burkett. Published by Orange Judd Co., New York.
- "The Practical Stock Doctor." By Waterman. Published by Dickerson & Co., Detroit.
- "Sheep Farming in America." By Wing. Published by Sanders Publishing Co., Chicago.
- "Modern Sheep Breeds and Management." By "Shepherd Boy." Published by American Sheep Breeder Co., Chicago.
- *"Sheep Farming." By Craig. Published by Macmillan Co., Toronto. \$1.50.
- "Sheep Feeding and Farm Management." By Doame. Published by Ginn & Co., New York.
- "Sheep Management." By Franz Kleinhertz. Published by Franz Kleinhertz, Madison, Wis.
- "Fitting Sheep." By "Shepherd Boy." Published by Draper Publishing & Supply Co.
- "Sheep Breeds and Management." By Wrightson. Published by Vinton & Co., Chicago.
- "Angora Goat Raising & Milch Goats." By Thompson. Published by American Sheep Breeder Co., Chicago.
- *"Productive Swine Husbandry." By Day. Published by Lippincott & Co., Philadelphia. \$1.00.
- "Swine." By Dietrich. Published by Breeders' Gazette, Chicago.
- "Swine Husbandry." By Coburn. Published by Orange Judd Co., New York.
- "The Hog Book." By Dawson. Published by Breeders' Gazette, Chicago.
- "Pigs, Breeds and Management." By Spencer. Published by Vinton & Co., London.
- "The Horse Book." By Johnson. Published by Breeders' Gazette, Chicago.
- "Heavy Horses, Breeds and Management." By various authors. Published by Vinton & Co., London, Eng.
- "Light Horses, Breeds and Management." By various authors. Published by Vinton & Co., London.
- "Points of the Horse." By Hayes. Published by Hurst & Blackwell, London.
- "The Horse." By Roberts. Published by Macmillan Co., Toronto.
- "Studies in Horse Breeding." By Carlson. Published by H. G. Carlson, Norfolk, Neb.
- *"Productive Horse Husbandry." By Gay. Published by Lippincott & Co.
- "History of Shorthorn Cattle." By Sanders. Published by Sanders Publishing Co., Chicago.
- "History of Shorthorn Cattle." By Sinclair. Published by Vinton & Co.
- "History of Aberdeen Cattle." By Sinclair. Published by Vinton & Co.
- "History of Hereford Cattle." By Sinclair. Published by Vinton & Co.
- *"Beef Production." By Mumford. Published by H. W. Mumford, Urbana, Ill. \$1.25.
- "The Horse." By Gay. \$1.50.

*For the practical man or average farmer.

FIELD HUSBANDRY

- *"Cereals in America." By Hunt. Published by Orange Judd Co. \$1.75.
- "The Book of Wheat." By Dondlinger. Published by Orange Judd Co.
- "The Book of Corn." By Myrick. Published by Orange Judd Co.
- "Wheat Growing in Canada, The United States and Argentina." By Rutter. Published by A. & C. Black, London. \$1.50.
- "The Book of Alfalfa." By Coburn. Published by Orange Judd Co.
- "Alfalfa." By Coburn. Published by Orange Judd Co.
- "Alfalfa in America." By Wing. Published by Sanders Publishing Co., Chicago.
- "Forage Crops." By Voorhees. Published by Macmillan Co., Toronto.
- "Forage & Fibre Crops in America." By Hunt. Published by Orange Judd Co. \$1.75.
- "Forage Plants." By C. V. Piper. Published by Macmillan Co., Toronto.
- "Soiling Crops and the Silo." By Shaw. Published by Orange Judd Co. \$1.50.
- "Grasses." By Shaw. Published by Orange Judd Co.
- "Clovers." By Shaw. Published by Orange Judd Co. \$1.15.
- "Forage Crops." By Shaw. Published by Orange Judd Co.
- "The Potato." By Fraser. Published by Orange Judd Co.
- "Cyclopedia of American Agriculture." Four volumes. By L. H. Bailey. Published by Macmillan Co., New York. \$20.00.
- "Meadows and Pastures." By Wing. Published by Breeders' Gazette, Chicago.
- "Soil Fertility & Permanent Agriculture." By Hopkins. Published by Ginn & Co., New York. \$2.25.
- *"Soils." By Fletcher. Published by Doubleday, Page & Co., New York. \$1.85.
- "Dry Farming." By Macdonald. Published by Century Co., New York.
- "Dry Farming." By Widstoe. Published by Macmillan Co., New York. \$1.50.
- "Dry Land Farming." By Thomas Shaw. Published by The Pioneer Co., St. Paul, Minn.
- "Soil Culture Manual." By Campbell. Published by the Author, Lincoln, Neb.
- "Farm Manures." By Charles E. Thorn. Published by Orange Judd Co., New York. \$1.50.
- "Farm Management." By G. F. Warren. Published by Macmillan Co., Toronto.

- "Farmers for Forty Centuries." By King. Published by Author, Madison, Wis.
- "The Book of the Rothamsted Experiments." By Hall. Published by Dutton & Co., London. \$3.50.
- "Irrigation and Drainage." By King. Published by Macmillan Co.

DAIRYING

- "Canadian Dairying." By Dean. Published by William Briggs, Toronto. \$1.00.
- "Farm Dairying." By Laura Rose. Published by A. C. McClurg Co., Chicago. \$1.35.
- "Dairy Cattle & Milk Production." By Eckles. Published by Macmillan Co., New York. \$1.50.
- "Principles and Practice of Butter Making." By McKay and Larsen. Published by John Wiley & Sons, New York. \$1.50.
- "First Lessons in Dairying." By Van Norman. 50 cents.
- "Questions and Answers in Buttermaking." By Publow. 50 cents.
- "Testing Milk and its Product." By Farrington & Woll. \$1.25.
- *"Buttermaking on the Farm." By Tisdale & Robinson. Published by John North, 98 Fetter Lane, London. 30 cents.
- *"Practice of Soft Cheesemaking & Preparation of Cream for Market." By Tisdale & Robinson. Published by John North, 98 Fetter Lane, London. 30 cents.
- *"Buttermaking on the Farm and at the Creamery." By Tisdale & Robinson. Published by John North, 98 Fetter Lane, London.
- *"Modern Methods of Testing Milk and Milk Products." By Lucius Van Slyke. Published by Orange Judd Co.
- *"Bacteria as Friends and Foes of the Dairy Farmer." By W. Sadler. Published by Methuen & Co., London. 50 cents.

POULTRY

- "Poultry Craft." By Robinson. \$1.25.
- "American Standard of Perfection." \$2.00.
- *"Productive Poultry Husbandry." By H. R. Lewis. Published by Lippincott. \$2.00.
- "Our Domestic Birds." By J. H. Robinson.
- "Principles and Practice of Poultry Culture." By J. H. Robinson. Published by Ginn & Co. \$2.50.
- "Poultry Production." By W. A. Lippincott. Published by Lea & Febiger, Philadelphia. \$2.25.

*For the practical man or average farmer.

HORTICULTURE

- *"Principles of Fruit Growing." By Bailey. Published by Orange Judd Co. \$1.50.
- "Bush Fruits." By Card. Published by Orange Judd Co. \$1.50.
- "The American Apple Orchard." By Waugh. Published by Orange Judd Co. \$1.00.
- "Plums and Plum Culture." By Waugh. Published by Orange Judd Co. \$1.50.
- "Popular Fruit Growing." By Green. Published by Webb Publishing Co. \$1.50.
- *"Canadian Apple Growers' Guide." By Wolverton. Published by Canadian Horticulturist Publishing Co., Peterboro. \$2.25.
- *"The Nursery Book." By Bailey. Published by Orange Judd Co. \$1.50.
- "Propagation of Plants." By Fuller. Published by Orange Judd Co. \$1.50.
- "Garden Farming." (Vegetable). By Corbett. Published by Ginn & Co. \$2.00.
- "Vegetable Gardening." By Watts. Published by Orange Judd Co. \$1.75.
- "Success in Market Gardening." By Rawson. Published by Orange Judd Co. \$1.50.
- "Garden Making." By Bailey. Published by Orange Judd Co. 75 cents.
- "Tomato Culture." By Tracy. Published by Orange Judd Co. 50 cents.
- "Celery Culture." By Beattie. Published by Orange Judd Co. 50 cents.
- "Gardening for Pleasure." By Henderson. Published by Orange Judd Co. \$1.50.
- *"Practical Floriculture." By Henderson. Published by Orange Judd Co. \$1.50.
- "Greenhouse Construction." By Taft. Published by Orange Judd Co. \$1.50.
- "Greenhouse Management." By Taft. Published by Orange Judd Co. \$1.50.
- "Landscape Gardening as Applied to Home Decoration." By Maynard. Published by Orange Judd Co. \$1.50.
- "Practical Forestry." By Fuller. Published by Orange Judd Co. \$1.50.
- "Fruit Growers' Guide Book." By Favor. \$1.00.
- "Systematic Pomology." By Waugh. \$1.00.
- "Amateur Fruit Growing." By Green. 50 cents.
- "Manual of Gardening." By Bailey. \$2.00.
- "Vegetable Gardening." By Green. \$1.00.
- "Landscape Gardening." By Waugh. \$1.00.

- "Bean Culture." By Sevey. 50 cents.
- "A B C of Potato Culture." By Terry. 50 cents.
- "Asparagus." By Hexamer. 50 cents.
- "Cabbages, Cauliflower and Allied Vegetables." By Allen. 50 cents.
- "Mushrooms and How to Grow Them." By Falconer. \$1.00.
- "New Onion Culture." By Grainer. 50 cents.
- "Practical Forestry." By Fuller. Published by Orange Judd Co. \$1.50.
- "Strawberry Culture." By W. T. Macoun. Bulletin No. 62. Dominion Government Bulletin, Central Experimental Farm, Ottawa.
- "Reports of Dominion Horticulturist for 1913-12-11-10, etc."
- "Strawberry Culture and the Red Raspberry." Bulletin No. 210. Ontario Department of Agriculture.
- "Cabbage and Cauliflower." Bulletin No. 203. Ontario Department of Agriculture.
- "Onions." Bulletin No. 199. Ontario Department of Agriculture.
- "Tomatoes." Bulletin No. 196. Ontario Department of Agriculture.
- "Apple Orchard." Bulletin No. 194. Ontario Department of Agriculture.
- "Reports of the Ontario Fruit Growers' Association."
- "Reports of the Ontario Vegetable Growers' Association."
- "Reports of the Ontario Fruit Branch."
- "Fungous Diseases Affecting Vegetables." Bulletin No. 171. The Ontario Department of Agriculture.
- "Bee-keeping." Bulletin No. 182. Ontario Department of Agriculture.
- "Codling Moth." Bulletin No. 187. Ontario Department of Agriculture.
- "Lime-Sulphur." Bulletin No. 198. Ontario Department of Agriculture.

ELEMENTARY AGRICULTURE

- "Agriculture through the Laboratory and School Garden." By Jackson and Daugherty. Published by Orange Judd Co. \$1.50.
- "Rural School Agriculture." By Davis. Published by Orange Judd Co. \$1.00.
- "Agriculture for Common Schools." By Hastings & Cotton. Published by Chas. Scribner & Sons, New York. \$1.00.
- "One Hundred Lessons in Agriculture." By Nolan. Published by Row Peterson & Co. \$1.00.
- *"Agriculture for Beginners." By Burckett, Stevens & Hill. Published by Ginn & Co. 75 cents.

*For the practical man or average farmer.

- "Elementary Agriculture & Nature Study." By Brittain. Published by Educational Book Co. 75 cents.
- *"School and Home Gardens." By Meier. Published by Ginn & Co. \$1.00.
- *"Agronomy—Practical Gardening." By Clute. Published by Ginn & Co. \$1.00.
- "The School Garden Book." By Weed and Emerson. Published by Scribner and Sons, New York. \$1.25.
- "Gardens and Their Meaning." By Williams. Published by Ginn & Co. \$1.00.
- *"The American Flower Garden." By Blantham. Published by Doubleday, Page Co. New York \$1.50.
- "Amongst School Gardens." By Greene. \$1.25.
- "Among Country Schools." By Kern. \$1.25.
- "Country School and Country Life." By Carney. \$1.25

NATURE STUDY

- "The Handbook of Nature Study." By Comstock. Published by the Author. Ithaca, N.Y. \$3.50.
- "Nature Study and Life." By Hodge. Published by Ginn & Co. \$1.50.
- "Nature Study." By Holtz. Published by Chas. Scribner Co. \$1.50.
- "How to Teach the Nature Study Course." By Dearness. Published by Copp, Clark & Co. 50 cents.
- "First Studies in Plant Life." By Atkinson. Published by Ginn & Co. 75 cents.
- "Beginners' Botany." By Bailey. Published by Macmillan Co. 75 cents.
- *"How to Know the Wild Flowers." By Mrs. Dana. Published by Scribner & Sons. \$2.00.
- "How to Know the Ferns." By Parsons. Published by Scribner & Sons. \$1.50.
- "Our Native Trees." By Keeler. Published by Scribner & Sons. \$2.00.
- "Our Northern Shrubs." By Keeler. Published by Scribner & Sons. \$2.00.
- "Squirrels and Other Fur-bearing Animals." By Burroughs. Published by Houghton, Mifflin Co. 60 cents.
- *"Corn Plants." By Sargent. Published by Houghton, Mifflin Co. 75 cents.
- "Trees of New England." By Dame and Brooks. Published by Ginn & Co. \$1.50.
- *"Bird Guide—Land Birds." By Reed. Published by Chas. K. Reed, Worcester, Mass. 75 cents.
- *"Flower Guide." By Reed. Published by Chas. K. Reed, Worcester, Mass. 75 cents.
- "Bird Life." By Chapman. Published by D. Appleton Co. \$2.00.

- "Secrets of the Woods." By W. J. Long. Published by Ginn & Co., Boston. 60 cents.
- "Wood Folk at School." By W. J. Long. Published by Ginn & Co., Boston. 60 cents.
- "Wilderness Ways." By W. J. Long. Published by Ginn & Co., Boston. 60 cents.
- "Ways of Wood Folk." By W. J. Long. Published by Ginn & Co., Boston. 60 cents.
- "Animal Competitors." By Ernest Ingersoll. Published by Sturgis & Walton. New York. \$1.25.
- "Wild Animals I Have Known." By E. Thompson Seton. Published by William Briggs. Toronto. \$2.00.
- "Lives of the Hunted." By E. Thompson Seton. Published by Scribner, New York. \$2.00.
- "First Lessons with Plants." By L. H. Bailey. Published by Macmillan Co., New York. 75 cents.
- "Flashlights on Nature." By Grant Allen. Published by George Newnes. London. 40 cents.
- "Fifty Common Birds of Farm and Orchard" (with coloured illustrations). Farmers Bulletin No. 513. Fifteen cents. To be obtained from the Superintendent of Documents, Washington. D.C.
- "Modern Nature Study." By Silcox and Stevenson. 75 cents.
- "Bird Life." By Reed. 68 cents.

BOTANY

- "Agricultural Botany." By Percival. Published by Holt & Co. \$2.25.
- "Botany." By Bailey. Published by Macmillan Co. \$1.00.
- "Plant Physiology." By Duggar. Published by Macmillan Co. \$1.75.
- "Fungous Diseases of Plants." By Duggar. Published by Ginn & Co. \$1.75.
- "Diseases of Economic Plants." By Stevens & Hall. Published by Macmillan Co. \$1.50.
- *"Fodder and Pasture Crops." By Clarke & Malte, Ottawa. 50 cents.
- "Field, Forest and Garden Botany." By Gray. \$1.80.
- "Botany for Beginners." By Evans. 80 cents.
- "Text Book of Botany." By Strasburger. \$5.00.

BACTERIOLOGY

- *"Bacteria in Country Life." By Lipman. Published by Macmillan Co.
- "Microbe Biology." By Marshall. Published by Blackistons. \$2.50.

*For the practical man or average farmer.

"Dairy Bacteriology." By H. W. Pond.
Published by Ginn & Co. \$1.25.

"Dairy Bacteriology." By Russell. Published by the Author, Madison, Wis.

"Primer of Sanitation." By Ritchie. Published by World Book Co., New York. 50 cents.

"Agricultural Bacteriology." By Conn. Published by Blackiston Sons & Co., 1012 Walnut St., Philadelphia. \$2.00.

"Agricultural Bacteriology." By Percival. Published by Duckworth & Co., 3 Henrietta St., Covent Garden, London, W. C., England. \$1.75.

"Microbiology." By Marshall. \$2.50.

"Bacteria, Yeasts and Molds in the Home." By Conn. \$1.00.

ENTOMOLOGY

*"Insect Pests of Farm, Garden & Orchard." By Saunderson. Published by Wiley Sons. \$3.00.

*"Insects Injurious to Fruits." By Saunders. Published by Lippincott. \$2.00.

"Insects Injurious to Vegetables." By Chittenden. Published by Orange Judd Co. \$1.50.

"Insects and Insecticides." By Weed. Published by Orange Judd Co. \$1.25.

"Manual of Fruit Insects." By Slingerland & Crosby. Published by Macmillan Co. \$2.00.

"Elementary Entomology." By Sander-son & Jackson. \$2.00.

"Insect Life." By Comstock. \$1.75.

"How to Know the Butterflies." By Comstock. \$2.25.

"Manual for Study of Insects." By Comstock. \$3.50.

CHEMISTRY

*"The Feeding of Crops and Stocks." By Hall. Published by John Murray, London. \$1.50.

"Fertilizers." By Voorhees. Published by Macmillan Co., New York.

"Agricultural Chemistry." By Fraps. Published by Chemical Publishing Co., Easton, Pa.

"The Soil." By Hall. Published by John Murray, London. \$1.50.

*"Elementary Household Chemistry." By Snell. Published by Macmillan Co. \$1.25.

"Chemistry of the Farm." By War-ington. 90 cents.

"Chemistry of Plant and Animal Life." By Snyder. \$1.50.

PHYSICS

"Physics of Agriculture." By F. H. King. Published by the Author. \$1.25.

*"A Text Book of Physics." By Millican & Gale. Published by Ginn & Co. \$1.25.

"Physics of the Household." By C. J. Lynde. Published by Macmillan Co. \$1.25.

"A Practical Arithmetic." By Stevens & Butler. Published by Chas. Scribner & Sons. 65 cents.

*"Rural Arithmetic." By Calfee. Published by Ginn & Co. 20 cents.

RURAL ECONOMICS

"Challenge of the Country." By Greene. \$1.25.

"Rural Life in Canada." By MacDougall. \$1.00.

"Principles of Rural Economics." By Carver. \$1.30.

"Co-operation in Agriculture." By Powell. \$1.50.

AGRICULTURE

"Soil." By King. Published by Macmillan Co., New York. \$1.50.

"Soil." By Hall. \$1.50.

"Beginnings in Agriculture." By Mann. 75 cents.

"Elements of Agriculture." By Warren. \$1.10.

AGRICULTURAL ENGINEERING

(A)

"Agricultural Engineering." By David-son. Published by Webb Publishing Co. \$1.50.

"Building Construction." Published by Webb Publishing Co., St. Paul, Minn. \$1.50.

"The Country Home." By Powell. Published by Webb Publishing Co., St. Paul. \$1.50.

"Country Homes & Gardens." By Powell. Published by Webb Publishing Co., St. Paul, Minn. \$3.00.

"Framing." Radford Architectural Co., Chicago, Ill. \$1.00.

"Radford's Details of Building Construction." Radford Architectural Co., Chicago, Ill. \$1.00.

"Barn Plans and Outbuildings." Published by Webb Publishing Co., St. Paul, Minn. \$1.00.

"Ventilation of Buildings." Published by Webb Publishing Co., St. Paul, Minn. 75 cents.

"Silo Construction." By King. Published by Webb Publishing Co., St. Paul, Minn. 50 cents.

*For the practical man or average farmer.

(B) GASOLINE ENGINES

- "Traction Engines and Traction Engineering. Published by F. H. Drake & Co., Publishers, Chicago, Ill.
- "The Gasoline Engine on the Farm." Published by N. W. Henley Publishing Co., 132 Nassau St., New York. \$1.00.

(C) STEAM ENGINES

- "Instructions for Stationary and Traction Engineers." Webb Publishing Co., St. Paul. \$1.25.
- "Science of Successful Threshing." Published by J. I. Case Co., Winnipeg and Toronto. Free.

CONCRETE

- "What a Farmer can do with Concrete." (and 11 other booklets). Canada Cement Co., Montreal and Winnipeg. Free.
- "Roads, Paths and Bridges." By Page. Published by Webb Publishing Co., St. Paul. \$1.00.
- "Farm Blacksmithing." By Drew. Published by Webb Publishing Co., St. Paul. 50 cents.

MECHANICS

- "Home Water Works." By Lind. Published by Webb Publishing Co., St. Paul. \$1.00.
- "Home Waterworks." By Lynde. Published by Sturgis & Walton.
- "Practical Telephone Hand Book and Guide." Published by Drake & Co.

FLOWERS

- "Flowers and How to Grow Them." By Rexford. 50 cents.
- "Book of the Rose." By Mellier. \$1.75.
- "Daffodils and Narcissus and How to Grow Them." By Kerley. \$1.10.
- "Flower Garden." By Bennett. \$1.10.
- "Home Floriculture." By Rexford. \$1.00.
- "Vines and How to Grow Them." By McCullen. \$1.10.

APICULTURE

- "A B C of Bee-keeping." By Root. \$1.75.
- "The Honey Bee." By Langstroth. \$1.25.
- "Writings on Bees." By Alexander. 50 cents.

ENGLISH

- A good dictionary.
- "School of the Woods". By W. J. Long.
- "Animal Heroes." By E. Thompson Seton.
- "The Kindred of the Wild." By C. G. D. Roberts.
- "The Watchers of the Trails." By C. G. D. Roberts.
- "David Copperfield." By Charles Dickens.
- "Adam Bede." By George Eliot.
- "Old Mortality." By Scott.
- "Robinson Crusoe." By Defoe.
- "Pilgrim's Progress." By Bunyan.
- "Alice in Wonderland." By Lewis Carroll.
- "Flint and Feathers." By Pauline Johnson.
- "The Man from Glengarry." By Ralph Connor.
- "Songs of a Sourdough." By Service.
- Longfellow's Poems.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE EXPERIMENTAL FARMS

THE DIVISION OF FORAGE PLANTS

Forage Plants; Summary of Results. Prepared by the Dominion Astrologist and the superintendents of the branch experimental farms and stations, Bulletin, No. 84, of the Division of Forage Plants, supplies reports of results reached by a variety of tests at many points under differing conditions. In Indian corn, for instance, at the Central Experimental Farm, twelve varieties were tested, of which four, namely, Quebec Yellow, Windus Yellow Dent, Canada Yellow and Free Press, produced a comparatively

great number of ripe ears, but were low yielding as far as the tonnage of ensilage concerns. Tests of field roots and leguminous forage plants were made at the branches and stations in like manner, the results of which are set forth in this 35-page Bulletin. There are also included suggestions as to the varieties to grow and the crop production methods to follow, as deduced from the results of experimental work in the different provinces.

THE LIVE STOCK BRANCH

THE DIVISION OF SHEEP AND GOATS

The Angora Goat. Pamphlet No. 12, of the Sheep and Goat Division, is devoted to a general discussion of the methods of management, feeding and breeding of the

Angora Goat and particulars of mohair production, by T. Reg. Arkell, B.S.A., B.Sc., and Horace V. Bent, B.S. Turkey was the original home of the Angora and Turkey was formerly the largest source of supply of mohair. With Turkey at war the opportunity occurs for other countries to prove enterprising in this direction. Therefore this pamphlet is especially timely. South Africa some years ago took to breeding and raising the Angora, and has come to share largely in the mohair market. The United States has taken up the industry to some extent, but Canada has not so far done a great deal. Letters, however, published in this pamphlet show not only that this climate is adapted to the breed, but that the breed can be adapted to the climate. A short sketch of the early history of the Angora is followed in the Pamphlet, which consists of 22 pages with illustrations of types and of fleece at different periods, by details of the nature of the Angora and the treatment necessary to obtain the best and most profitable results. Although Turkey once had a virtual monopoly and still produces the finest quality of mohair, South Africa has become the greatest source of supply, producing 15,000,000 lb. of mohair, as against 10,000,000 lb. by the country in trouble and 6,000,000 lb. by the rest of the world.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

QUEBEC

Maple Sugar and Maple Syrup Industry. In Circular, No. 2, of the Quebec Department of Agriculture, it is pointed out that in one year the value of the maple sugar and maple syrup produced in the province exceeded the value of the fruit gathered, the figures being, for maple sugar and syrup, \$1,680,393, and, for fruit, \$1,469,537. The circular contains practical advice to the makers of maple products.

Arboriculture. Under this title, the annual report for 1913-14 of the Branch of Fruit Tree Culture of Quebec has made its appearance. It is a 23-page red-covered publication with full page illustrations of fruit exhibits, demonstrations, crops and suitable buildings accompanying comprehensive descriptive reports of experiments and other operations at the different fruit stations in the province, and of the proceedings of the co-operative and horticultural societies.

ONTARIO

Agricultural and Household Science. In a 46-page blue book the Ontario Department of Education has issued rules and regulations for the establishment, organ-

ization and management of Agricultural and Household Science Departments in Continuation and High Schools and Collegiate Institutes. The conditions require the appointment of an Advisory Agricultural Committee of eight, to include four members of the school board and four resident ratepayers engaged in agricultural pursuits. The accommodation involves a special class-room for the study of agriculture and experimental plots. A work shop for manual training has also to be provided. The equipment necessary includes library, charts, lantern slides, garden tools and labels, models of apple boxes and barrels, microscopes and lenses, models of beehives, standard hen houses, scales, milk pails, creamery cans, thermometers, models of barns and pens, a work bench, tables, stoves, kitchen utensils, etc. The qualification required of teachers is set forth along with a descriptive list of studies and the expenditure that is necessary. Appendices outline a seasonal course in special agricultural subjects, and detail the equipment with cost of each article required in the agricultural and household science departments.

The Canadian Entomologist. The August number of *The Canadian Entomologist* contains the following articles: "Lice Affecting the Domestic Fowl," by A. W. Baker, Guelph, Ont.; "A New Hoplandothrips from British Guiana," by J. Douglas Hood, U. S. Biological Survey; "Mayflies of the Siphonurus Group," by Wilbert A. Clemens, Ithaca, N.Y.; "A Contribution Towards the Taxonomy of the Delphacidae," by F. Muir of the Sugar Planters' Experiment Station, Honolulu, and "On the Early Stages of Two Moths," by Wm. Barnes and J. McDunnough, Decatur, Ill. Descriptive plates accompany the articles.

The pure-bred live stock census for Ontario county, taken by the District Representative of the Department of Agriculture, figures as follows:

	Males	Females	Total
Clydesdales	97	367	464
Hackneys	11	12	23
Hackney ponies ..	5	5	10
Welsh ponies	2	7	9
Shetland ponies ...	2	11	13
Percherons	6	....	6
Thoroughbreds ....	...	1	1
Standard Bred .....	...	1	1
Shorthorns	296	1012	1308
Holsteins	16	86	102
Jerseys	138	581	719
Herefords	3	5	8
Polled Angus	3	6	9
Shropshire sheep ...	196	557	753
South Downs sheep .....	...	30	30
Leicester sheep	1	27	28
Horn-Dorset sheep ..	35	113	148
Berkshire Swine ...	17	44	61
Yorkshire Swine ...	41	73	114

MANITOBA

Meat and Its Substitutes. Circular No. 10 with this title is issued by the Extension Service of the Manitoba Agricultural College. It is of general public interest, giving receipts for the treatment of meat in various ways and of dishes that can be substituted of which eggs, beans, cheese, rice, tomatoes and macaroni are component parts.

Tree Pests and Cutworms. "Most of our elms are being deformed by these plant lice", says Circular No. 29, of the Extension Service of the Horticultural Department, Manitoba Agricultural College. The Circular gives methods of treatment for suppression.

Insect Poisons and Spray Mixtures. Circular No. 28, of the Extension Service, Botany Department, Manitoba Agricultural College, taking for its motto "Spraying is Plant Insurance", gives advice on methods of antagonism to the ravages of insects and disease, and to the inroads of weeds.

Poison Ivy and Other Poisonous Plants. Circular No. 12, of the Extension Service, Botany Department, Manitoba Agricultural College, furnishes counsel on the recognition of poison ivy, quoting "If leaves three, let it be", and as to what is to be done when rashness or ignorance has brought its hurt. It also treats of Cowbane, Poison Loco Weed, Sneezeweed and Spurge.

Fodder Corn in Manitoba. Circular No. 19, Extension Service Field Husbandry Department, Manitoba Agricultural College, by Jas. Bridge, B.S.A., tells the place in rotation of Indian corn, of preparation of the soil, time and methods of planting, quantity of seed per acre, summer cultivation, harvesting and the silo.

Hay and Pasture Crops in Manitoba. This is a 24-page illustrated Bulletin, issued by the Field Husbandry Department of the Provincial Agricultural College, that describes methods of cultivation of the five grasses most common to Manitoba, namely, Western Rye, Timothy, Brome, English Blue and Red Top, and of the various legumes—Alfalfa, Red Clover, Alsike Clover, White Dutch Clover—as well as corn, oats, peas, winter rye and millets, of which the best known and best suited to the West are Common and Hungarian.

BRITISH COLUMBIA

Management of Geese. Circular Bulletin, No. 12, of the live stock branch of the Department of Agriculture points out that

geese are both profitable and easy to handle. Toulouse and Embden are the most popular, but African and Chinese find favour. The circular gives full descriptions of the breeds and of their mating, housing, feeding and rearing.

The Home Vegetable Garden. Circular No. 24 of the Horticultural Branch of the provincial Department of Agriculture, dealing with vegetable growing in the southern interior sections of British Columbia, points out that in 1914 the province imported from other parts of Canada \$475,000 worth of fresh and canned vegetables and from foreign ports \$418,000 worth, all of which it is suggested could have been raised within the provincial borders. The Circular proceeds to give advice as to location, soil, fertilizers, plan of garden, irrigation, the hot-bed and cold frame, and cultural methods for some thirty different vegetables, the majority of which are common to other parts of Canada.

Reports of the B.C. Dairymen's Association. The annual reports for each of the two years ending December 31st, 1913, and 1914, of the British Columbia Dairymen's Association, has just been issued in one volume. The reports are the eighth and ninth yearly and contain not only the proceedings at the meetings, but also the awards made in a variety of competitions, including those in milk and cream, that took place in January this year at Vancouver. The constitution and by-laws, along with a list of members, are given.

Vegetable Crop Conditions. The following vegetable acreages in British Columbia compared with 1914, are given in Crop Report No. 3 of the Horticultural Branch:

	1914	1915
Vegetable	acres	acres
Potato.	13,350	15,000
Onions.	396	400
Tomatoes	455	280
Cabbage	215	225
Beans.	580	575
Celery	70	58

MISCELLANEOUS

The Clydesdale Stud Book of Canada. Vol. XXIII of the Clydesdale Stud Book has just been issued from the office of the Canadian Live Stock Records. It contains records of pedigrees of stallions from 15,615 to 16,560, and, of mares, from 32,285 to 34,037. Besides the records, a list of officers past and present, rules of entry, minutes of the 28th annual meeting, very complete indices, a list of breeders and owners, and a full report of awards at the leading exhibitions from Edmonton, 1913, to Ottawa winter fair, 1915, are given.

Volume 40 of the American Hereford Record has just made its appearance. It covers the period from Jan. 2, 1914, to December 30, 1914, and contains a total of 25,000 entries. Half a million Herefords have been recorded since the establishment of the record in 1880.

The Agricultural Gazette of New South Wales for June, among a variety of articles mainly of entirely Australian interest contains an account of "A Visit to Dr. S. M. Babcock at the Wisconsin University", by H. W. Potts, F.C.S., F.L.S., Principal of Hawkesbury Agricultural College. It tells in brief the story of the origin of the test that bears the professor's name and the claim is made that its use became general in the factory system of Australia and New Zealand before it did in any other country, including both the United States and Canada. Notice is also given in the *Gazette* of the suspension for the year of examination of stallions owing to the vacancies in the veterinary staff caused by the war and the impossibility of finding substitutes.

The Minutes of the Annual and Directors' meetings of the Canadian Ayrshire Breeders' Association for 1915 have made their appearance in book form and they take, along with Ayrshire records, and other matters of interest to breeders, no fewer than 173 pages. Besides verbatim reports of the meetings referred to, a com-

plete record of performance by pure-bred Ayrshires is given along with the constitution, by-laws, rules of entry, scale of points, rules and regulations for record of performance, results of winter fair dairy tests and full list of members. A paper by John McKee, of Norwich, Ont., supplies details of a variety of interesting and valuable experiments.

"*Swine Judging for Beginners*" is the title of the July Bulletin of the extension service of the Ohio Agricultural College. The Bulletin gives just such elementary facts as every swine breeder needs at the outset to have at his finger's end.

Bulletin No. 3 of the Massachusetts Board of Education relates to State-Aided Vocational Agricultural Education in 1914. Four vocational agricultural schools and nine vocational agricultural departments in High Schools are now receiving aid from the state. Advisory committees of professional farmers take an active part in the management of those schools. Extension work is a feature. Conferences between instructors and experimental experts from the state agricultural college and representatives of the United States Department of Agriculture are held the last week in February and the last three days in July. Full descriptions of the school work and conference proceedings are given in the bulletin.

NOTES

The Department of Agriculture of New South Wales announce in their *Agricultural Gazette* for June, that the Department is prepared to test vegetable and farm crop seeds. After testing, reports will be given stating the germinating capabilities of the seed, its purity and the nature of the impurities, if any.

The Saskatchewan Department of Agriculture has issued a series of notices for the bulletin boards of the province regarding the Canada and Perennial Sow Thistles; live stock prices from June 1st to July 31st, and the advantages of early fall cultivation. Coloured plates of the exact appearance of the thistles, and an illustrated chart showing the difference between early and late cultivation, accompany the notices. The bulletin posting system of Saskatchewan, initiated by Captain A. F. Mantle, Deputy Minister of Agriculture, has been received with much favour.

When the farm woman has been aroused, the woman who on the little farm is striving to get the mortgage paid off so that she can do a little better for her children as they grow up, then that woman is going to go on, and on, in her thoughts, until her children shall make better farmers than their father, better men and women than their fathers and mothers, because they have had a better chance.—*A Woman Farmer.*

There was held in Chicago, on July 7th and 8th, a Banker-Farmer Conference. This gathering was organized and carried out by the Agricultural Commission of the American Bankers' Association whose platform is Citizenship—Co-operation—Better Schools—Better Roads—Farm Demonstrations—Better Tenancy Methods—Community Building—Farm Home and Town—Marketing and Distribution—Rural Credits—Soil Fertility.

Large shipments of potatoes from British Columbia have been made to Australia and the Fiji Islands.

The Deputy Minister of Agriculture for British Columbia has given notice to secretaries of fall fair associations that, owing to the necessity for economy, the department will only supply one judge for horses and cattle, one for poultry, and one for fruit and vegetables.

It was announced at a meeting of the British Columbia Fruit Growers' Association that the peach crop would probably be the greatest known in the Okanagan valley. The duties of three additional fruit inspectors appointed by the Dominion for the Okanagan and Kootenay districts will commence on August 1st. One inspector has been assigned to the Grand Forks and Kootenay district and the other two to the section of country extending from Salmon Arm to the boundary.

A plan to assist in breeding up live stock has been followed by many United States bankers with success. The banker buys pure bred cows and distributes them to farmers on a profit sharing contract. The farmer furnishes the feed and care, takes all the milk and divides the increase. Another plan is to buy a bull calf, turn it over to a farmer during two breeding seasons and then sell it. This is not philanthropy, it is good business. The calf that cost \$50 is sold for \$100 and perhaps more. The farmer takes no risk and is breeding up his herd. - *The Banker-Farmer*.

Two thousand one hundred dollars are to be distributed in prizes at a boys' and girls' "baby beef" contest in connection with the extension work of the Iowa State College. Several trips to the national capital, valued at \$100 each, and to the International Stock Show at Chicago are also to be offered as prizes. The awards will be announced at the Iowa State Fair in 1916. The contest will begin October 1st this year, when entries must be in and the calves must not be over 8 months old. Competitors must have been over 10 and under 19 years of age on 1st January, 1915. All records must be in the hands of the "state leader" immediately after 1st October, 1916, when the contest closes. The basis of awards will be: rate of gain, 40 per cent; economy of gain, 30 per cent; records kept and written report, 30 per cent. Premiums will also be offered at the state fair for "baby beeves" owned and exhibited by boys and girls.

English fruit crops are reported to be up to the average.

The Peach Growers' Publicity League has recently been organized with headquarters in New York city. A publicity campaign was to be commenced on August 25th and to continue until the end of September. Merchants have subscribed several thousand dollars to meet expenses.

Mr. Robert Newton, Director of Agricultural Education, New Brunswick, is taking a course in artillery work at the Kingston, Ontario, Military School. If the demand for men to go to the front continues, Mr. Newton, like many other agricultural officials, will go forward in the defence of the Empire.

The appointment is announced of J. Forsyth Smith as Canadian Fruit Trade Commissioner in England. Mr. Smith was formerly Prairie Fruit Markets Commissioner and attached to the Horticultural Branch of the British Columbia Department of Agriculture.

No one who reads at all widely the agricultural reports from the countries abroad can fail to be struck with the part women are taking in the re-direction of country life. Women are regenerating the rural schools. They are carrying out agricultural experiments. They are giving a lead in the matter of co-operation in rural home and community industries. They are banding themselves together to raise the standard of living in the country. What is most important of all, they are increasing the efficiency of the rural home.

Dean J. H. Skinner of Purdue University, Indiana, in the course of an address at a Banker-Farmer Conference on "What the Bankers Can Do for Livestock Production", made the following statement: "I believe that the day will come in our larger banks, and many of our country banks, when the bank cannot afford to be without a man trained in agriculture, who not only looks over the farm to see whether it is worth the loan or not, but who goes about among the farmers and finds out what their methods, facilities and systems are, and who is in a position to give them information that will improve the farms and enable them to make wise use of money or credit, and to put them in touch with the best of information available."

"The Handbook for Export to South America" by H. R. Poussette, Canadian Trade Commissioner at Buenos Aires, supplies valuable information regarding the trade that Germany did with South American countries prior to the war. In 1914, the exports from that country amounted in value to \$187,433,668, of which only about \$2,000,000 represented products of the farm and garden.

According to the *Weekly Bulletin* of the Department of Trade and Commerce for August 9th, 1,021 heads of Canadian cattle have arrived in France. This, according to the report is a beginning of the importation by France of 100,000 live cattle that will be required to keep up the stock of the country which is being depleted by war conditions. Arrangements have been made whereby France is to receive from England 20,000 tons of frozen meat. In addition to this, there will be required from thirty thousand to forty thousand head of cattle to feed the army. The report says, "In connection with the import into France of Canadian cattle, it is interesting to note that 1,021 heads of Canadian cattle have already arrived at Saint Nazaire, all of which have given the utmost satisfaction in every respect. The French Government and the Parliamentary Agricultural Committee were both represented at the post of Saint Nazaire, where the Canadian cattle arrived, and everyone was greatly impressed with the quality of the animals imported from Canada, and especially of the favourable conditions under which the transportation of these animals was carried out. The general appreciation of this group of experts is, perhaps, best illustrated in the official report of the President of the Syndicate of Auction Traders at the Villet Stock Yards to the President of the Agricultural Committee."

The following is an excerpt from this report which shows the favourable light in which Canadian cattle are regarded in France:—

"The Parliamentary Committee ordered at Saint Nazaire, after landing, the slaughter of four animals, two Canadian and two American, which gave the following results:—

In the Programme of Studies for the Schools of Manitoba just issued considerable attention is outlined in agriculture and elementary science for Grades V to VIII and for the Secondary Schools.

The Deputy Minister of Agriculture for British Columbia has received an acknowledgement, through the Under-Secretary for the Colonies, of the second remittance from the Farmers' and Women's Institutes of the province for Belgian relief, amounting to \$617.

A circular issued by the British Columbia Fruit Growers' Association bears testimony to the value of advertising, on which \$5,000 was expended the first part of the fruit season. Thirty thousand copies of a 78-page booklet, containing useful information, including 225 fruit canning and preserving recipes, were printed and circulated gratuitously. The circular declares the booklet is the best advertising the association has yet had.

In the Educational Record of the province of Quebec Mr. Boucher De La Bruere, Superintendent of Education, in a letter to the Protestant Commissioners and Trustees of the Province on consolidation says: "One of the advantages of consolidation of the rural schools is that it furnishes a better opportunity for the introduction of Nature Study and Elementary Agriculture along the modern lines which are now proving effective in many parts of Canada and the United States. The Protestant Committee have taken steps to secure special training for all rural teachers in these subjects. The work is emphasized at Macdonald College, and lectures are to be given also at the Lachute Summer School to the teachers in training. The reproach that the schools too often educate the young people away from the farm must be removed. It can and should be demonstrated that there is a large body of sound knowledge to be imparted at the rural school which will have the result of attaching the capable youth in greater numbers to the noble life of the farm."

KIND:	Live Weight	Net Weight	Age	Leather Weight	Tallow Weight	Yield	Observations:
Canadian bullock	Kilos 610	Kilos 380	3	Kilos 41	Kilos 25	62 =	Meat of choice quality. No waste. First class meat, but much too fat for consumption.
" cow	475	284	7	31	20	60 =	
American bullock	726	440	7	62	26	60 =	
" cow	648	380	7	54	25	51 =	

Mr. Alexander Galbraith, formerly of Madison, Wis., and Brandon, Man., and a gentleman who for a quarter of a century and more has officiated as judge at leading shows in Canada and the United States, has accepted the position of Superintendent of Fairs and Institutes for Alberta. He has also been an extensive importer and shipper of heavy horses and Hackneys, and has been president of the American Clydesdale Association. At present he is under engagement to judge at the Panama Exposition in San Francisco. Mr. Galbraith has also had extensive experience as lecturer on agricultural subjects, especially in live stock breeding, at Wisconsin, Iowa, Illinois, Indiana and New York state agricultural colleges.

The Monthly Statistical Bulletin of New South Wales shows that in the ten months from July, 1914, to April, 1915, the export of butter had increased in value compared with the corresponding period of 1913-14 by £397,042 and that the export of wool had decreased by £3,595,917, of wheat and flour by £2,783,223 and other pastoral produce by £46,756. The grain harvest shows a shortage, compared with the estimate of 15,700,000 bushels made in November, of 2,900,000 bushels. Taking in the 1,400,000 bushels carried over by millers and farmers, a shortage in the requirements for the year is estimated at 300,000 bushels, which, however, is more than made up by stocks amounting to 1,200,000 bushels held by bakers, storekeepers and produce merchants.

"Never pick fruit when at all damp or wet, unless absolutely unavoidable, or unless the fruit will be in the consumers' hands within a very few hours", is the advice given in the Fruit Branch Circular issued by the Ontario Department of Agriculture. The importance of careful picking and handling of fruit is also pointed out. In California gloves are worn in order to avoid the slightest scratch, thus not only preserving the appearance of the fruit but also protecting it from that early decay to which all fruit with broken or bruised skins is subject. Extracts are given from the reports of the Royal Commission of Agriculture appointed by the British Columbia government, one of which points out the growing popularity of packing apples in boxes rather than in barrels.

The crop report committee of the Ontario Beekeepers' Association has received reports from three hundred members of the association situated in all parts of Ontario. These reports show an average of fifty-five pounds of honey per colony, which is stated to be about an average crop. The quality of the honey is reported to be excellent. Their report states that the market is clear of old honey and that a good demand is anticipated. The prices recommended by the committee are as follows:

No. 1, Light Extracted, wholesale, 10 to 11½ cents per lb.

No. 1, Light Extracted, retail, 12½ to 15 cents per lb.

No. 1, Comb, wholesale, \$2.00 to \$2.75 per dozen.

No. 2, Comb, wholesale, \$1.50 to \$2.00, per dozen.

These prices are f.o.b. in 60 lb., 10 lb. and 5 lb. tins; the first being net weight and the two latter being gross weight.

The Saskatchewan Farmer, published at Moose Jaw, prints on the inside of the back leaf a coupon, which farmers are asked to use in announcing their contribution of the product of a certain area of their wheat crop, to be applied to the Patriotic Acre Fund of the Saskatchewan Grain Growers' Association. The coupon is prepared in blank for farmers to fill in and forward to the Central Secretary of the Association at Moose Jaw. Referring to the Patriotic Acre Fund, the *Saskatchewan Farmer* for August states that about 22,000 of these forms are in the hands of the members of the Association, and that supplies of them will be mailed to others who wish to canvass on behalf of the Fund. Arrangements have been made with the Saskatchewan Co-operative Elevator Company, Limited, under which they will take all grain offered in connection with the scheme at full carload track price. It is announced that the grain will be milled in the province at the lowest possible cost to the Fund, the bran and middlings being retained in the province for sale to the members of the Saskatchewan Grain Growers' Association. Flour will be put up in specially prepared sacks, bearing the emblem of the Association, and will be transported to the coast by the train-load, it is anticipated, free of cost, and on arrival in England it will be presented to the Imperial Government as a free gift from the farmers of Saskatchewan, to be devoted to the relief of those in need, whether their nationality be British or Belgian.

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RURAL EDUCATION IN CANADA

THE truth of the suggestion that he who would teach others must himself be well informed was perhaps never better exemplified than by the series of summer schools for teachers held at the various leading educational institutions in the different provinces during the past summer. It is greatly to the credit of the instructors of youth that so many have attended not only this year, but from the inception of the system. Of comparatively recent origin it was the complete success that marked the earlier stages that led to the completeness that has distinguished this year's series, as related in the Rural Science Section, or Part III, of this number of THE AGRICULTURAL GAZETTE.

By the kind services of a prominent educationist in each province, we are enabled to give a full and detailed account of the good work that was accomplished by much self denial throughout the entire Dominion. In Prince Edward Island the third session of summer schools was held, and no fewer than 360 teachers and students attended from July 12th to 23rd. In New Brunswick 179 were in attendance for a rather longer term. In Nova Scotia the number was 157. The School of Agriculture at Ste Anne de la Pocatière, the Oka Agricultural Institute and Macdonald College in Quebec each had gratifying classes. Ontario had 231 students, but it was in the West that the progress in the system was most marked, and that in spite of the distances with which the teachers had to contend. In Manitoba the attendance was 150, in Saskatchewan 136, in Alberta 310 and in British Columbia 690.

While there was naturally a variation in the different provinces, the main subjects taken up were common to all and could be included generally under the headings of rural and household science, art cultivation and manual training. Closest attention was devoted to those subjects that appealed to the greatest number, not only of teachers but of pupils, such as gardening in all its phases, farm mechanics, plant and animal life, nature study and the household arts. Special courses were given in instances in chemistry, in physics, in music, in drawing and in extra branches of agriculture. Alberta was unique in that folk dancing was included in the curriculum, and attracted 60 students.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION, SUMMERLAND, B.C.

BY J. H. GRIDDALE, B. AGR., DIRECTOR

IN November, 1914, some 550 acres, of which about 275 acres are irrigable, were secured, through the Department of Indian affairs, for Experimental Farm purposes. This land constituted part of the Penticton Indian Reserve and is situated on the outskirts of the municipality of Summerland, B.C., in the Okanagan district.

A Superintendent, Mr. R. H. Helmer, was appointed without delay and under his direction about 125 acres have been cleared, ploughed and put under crop this season.

A pipe line has been put in for irrigation purposes. This takes its water from the municipal system and from it the water is distributed through flumes to the irrigable part of the farm. About 256 acres have been graded and prepared to receive water but as the system was not completed until June, it was too late to irrigate a large portion of this area this year.

While it is the intention to make fruit-growing a main feature of the work on this Station, it is by no means to be conducted as a "fruit farm". All problems connected with field and animal husbandry will be studied, as these are practised, or may best be practised, in the district.

Valuable data on irrigation will, in time, accumulate. The water requirements of various crops, the best methods and times to apply irrigation water, frequency of application, etc., will be given special study. The portion of the Station not susceptible of irrigation will afford comparative data of crops grown under "dry-farming" conditions.

It has not been found possible to commence building operations on the Summerland Station this year, but it is hoped that a beginning will be made next season.

THE DIVISION OF ANIMAL HUSBANDRY

REGULATING RECORDS IN DAIRY HERD PRODUCTION

BY E. S. ARCHIBALD, B.A., B.S.A., DOMINION ANIMAL HUSBANDMAN

FOUR of the prominent factors in regulating the production of a dairy herd might be briefly discussed under the following headings:—

1. *Age at which Heifers should*

first Freshen. The exact age at which heifers should drop their first calves depends upon the breed of the heifer and upon her individuality, hence no absolute standard can be set. Animals not well fed and developed should certainly not be bred until they attain sufficient size; hence, these would not freshen for the first time until they are from 32 to 36 months of age. In herds where the animals are well fed from calf-hood until they drop their first calves it would be well for heifers to freshen for the first time at from 28 to 32 months of age. There are rare instances where heifers are coarse, rough, and overgrown; these heifers had better freshen at from 24 to 28 months of age in order to develop the milking tendencies as quickly as possible. Any breed of dairy cattle in Canada, or families of any breed, lacking size, constitution, and development, should be bred to freshen not earlier than 30 months of age.

2. Minimum Production for Heifers. The standards set forth for pure-breds by the Canadian Record of Performance are very good. Briefly, for 2-year-old heifers these are:—

	Lb. Milk	Lb. Fat
Ayrshire	5,500	198
Guernsey	5,000	200
French-Canadian	4,400	198
Holstein-Friesian	7,500	255
Jersey	5,500	218
Shorthorn	4,000	140

The demand of certain districts and markets giving greater emphasis on either total pounds of milk or pounds of butter-fat may vary the proportion of milk and fat which any individual farmer might set as a standard. Nevertheless the foregoing figures for 2-year-old heifers should be the minimum production determining the advisability of keeping heifers in the herd, except in rare instances where accidents may have occurred. Generally speaking, it is necessary for a heifer to produce nearly 200 pounds of butter-fat if she

will develop into a cow producing over 300 pounds of butter-fat. In either a pure-bred or grade herd the standard of 300 pounds of butter-fat per annum should be the minimum rather than the present production, which for the dairy cow in Canada scarcely reaches 150 pounds of butter-fat per annum. The standard which has been set for grade cows and heifers on the Dominion Experimental Farms is:—

For 2-year-old heifers, 4,000 pounds of milk and 160 pounds of butter-fat.

For mature cows, 5,000 pounds of milk and 300 pounds of butter-fat.

Occasionally heifers and cows which exceed the milk standard but which do not come up to the butter-fat standard, or *vice versa*, are retained in the herds for special reasons. Nevertheless, the above standards are being generally adopted.

3. Duration of first lactation in Heifers. The two-year-old heifer should be milked twelve months continuously after first calving, whether or not such a practice is to be maintained in the mature cows of the herd. Experience has taught our leading dairymen that it pays to calve the 2-year-old heifers in high condition and to feed them well at this stage. Such methods distend the udder and induce in the heifer maximum capacity. It is equally important to give the heifer a long first milking period in order to teach persistency. The 2-year-old heifer should be so bred that she will have from five to eight weeks' rest after her twelve months' lactation before calving as a 3-year-old.

4. Herd Improvements. Certain improvements have been made in the average production of each of the various herds at the Central Experimental Farm and branch farms throughout the Dominion. However, so much experimental work of varying nature has been conducted that it would be impossible at the present date to compile definite figures along this line. Many herds

are but newly established, hence there would be no definite figures to show the advantage of the above policy regarding the handling of heifers. At the Central Experimental Farm the Holstein and Jersey herds were established in the year 1912; and no definite figures regarding herd improvement as to heifers or mature cows are available. In the other three breeds at the Central Experimental Farm, namely, Ayrshires, French-Canadians, and Guernseys, established ten years or more, there has been an average of about 10 per cent increase in the production of both 2-year-old and

mature cows. Unfortunately, a few sires have been used on these herds which, though of the very best of breeding and splendid individuals, yet did not transmit desirable dairy qualities to their heifers. The influence of the sires used from year to year in any herd is of even greater importance than the influence of good feeding or good management in either heifers or mature cows. Owing to the above influences no results of a definite nature have been compiled and it would be necessary to have many years of such data in order to give definite results.

THE DIVISION OF BOTANY

EFFECT OF WET SEASON ON WHEAT AND POTATOES

BY H. T. GÜSSOW, DOMINION BOTANIST

"SOOTY EAR OF WHEAT"

A large number of samples of wheat have been received from the West in the laboratories of this Division, showing a more or less pronounced "sooty" appearance or "black specks" covering the ears. Field observations were also made during the latter part of the season in Ontario and the Maritime Provinces, which revealed the same conditions; in some instances the whole wheat plant in the stook was almost black.

It is quite natural that farmers finding their wheat assuming this colour should become very anxious and eagerly seek advice. Since these conditions seem to prevail universally this season, the following account has been prepared with a view to assure farmers that these conditions are primarily of a seasonal nature, and only in rare instances will they cause material losses. The discolouration is exclusively due to certain microfungi, of which the development is greatly favoured during wet seasons.

The commonest fungus of all is *Cladosporium*, probably the widely distributed species *herbarum* of Link. This causes the "sooty ear" proper. According to the quantity of fungus material present, the ears of wheat will appear either as if wholly covered with soot or as if speckled with it.

Generally speaking, "sooty ear" will appear in wheat that has been cut and exposed for a time to moist or rainy weather. Sometimes this condition will appear on the uncut wheat, particularly when the grain is nearly mature and rain prevents harvesting.

The same phenomenon is also known to occur before maturity of the grain, and may at times be directly due to excessive rains, but more often to the premature death of the leaves following upon summer drouth, which causes the grain to ripen prematurely and assume a shrivelled appearance. Indeed, this look is imparted by almost any agent which causes the premature death of wheat plants.

In all the instances referred to this fungus appears as a secondary symptom, and inflicts little or no damage on the grain itself.

It is very doubtful whether the fungus ever causes grain to become shrivelled. Some observers have so recorded, but the evidence is not at all conclusive. We personally have not been able to contribute any losses of grain to this fungus. Still it is not unlikely that when exceptionally moist weather occurs during the flowering period of wheat, this fungus may appear and frustrate the pollination of the ovary, and thus cause only imperfectly developed grain. In rare instances, however, the fungus will produce discoloration of the grain itself, when left too long in the ear on the field.

Since it is impossible to pre-arrange suitable weather, it is equally impossible to suggest any means of preventing this condition. It may be advisable, when periods of wet weather have been forecasted, to cut the wheat a little early and endeavour to bring it into the barn or other shelter before it is exposed to prolonged rains. When, however, rain falls continuously while the wheat is in the stook, farmers should do their best to hasten the drying of the grain by frequent turning over of the sheaves, or by using rain-proof covers for grain of special value, or for special purposes.

The appearance of the ears, however, is really more alarming than the damage done.

GLUME SPOT OF WHEAT

Another entirely different kind of ear discoloration is also being met with this year. It was observed in the growing plant, but would, of course, show also in plants in the stook. In this case the ears showed no sooty mould; but the glumes or seed-covering scales—showed reddish-brown to chocolate-brown spots, giving to the affected ears a much darker appearance than that of the

sound ones. This "glume spot" is common in Europe, and has been frequently observed by other investigators as well as ourselves on this continent. Toward the end of the season these spots show minute fruiting bodies filled with numerous spores. The fungus has been identified as *Septoria glumarum* Pass. The fungus rarely penetrates to the grain, hence does little or no damage to the crop. It is specially common during wet seasons.

WHEAT SCAB

The popular name which has been given to this disease is not as descriptive as could be desired, since our interpretation of scab is something very different from this appearance. In the Maritime Provinces wheat scab was apparently common this year, but the damage was slight. Its effect on the plants is really more alarming than any losses it causes. Farmers observing this trouble in their wheat are naturally anxious about it, but they can be assured that the damage which this disease causes in the Dominion is negligible. We have found it causing about 1 per cent loss; no doubt continued rainy weather may be responsible for a greater damage.

The appearance of the diseased heads is very characteristic. We can invariably recognise the disease by the bluish-brown discoloration of the haulm just below the ear for about 2-3 inches. If such an ear is cut off and the spikelets examined, there will be no difficulty in detecting at the base of some of them a fine rose-coloured deposit apparently growing from below the covering scale or glume. The affected spikelets, and the grain contained therein, are dead. Sometimes the central portion of a whole ear is killed off; sometimes all the portion above the infection is dead, while below the infection the grain may still be normal.

The disease is widely distributed in Canada. The fungus to which the production of the reddish deposit is due was long known as *Fusarium roseum* Link, but since the perfect stage of the fungus has apparently been discovered, the disease has received the name *Gibberella Saubinetii* (Mont.) Sacc.

It is not unlikely that partly infected grain on germinating may be destroyed by fungus mycelium, but we have no evidence to cause us to

believe that the disease is conveyed by diseased grain. Were this the case, the damage would be sure to be considerable.

But, apparently, the fungus being a very common one in nature, attacks wheat from the exterior by wind-borne spores. And here is where continued moist or rainy weather exerts its favourable influence on the development of this fungus disease.

THE POTATO CROP IN ONTARIO

CONTRIBUTED BY W. A. MCCUBBIN, M.A., ST. CATHARINES, ONT.

DURING a recent tour of Ontario inspecting fields of potatoes grown for seed, the writer has had an opportunity of noting the general situation in regard to this crop throughout the greater part of the province, and thought that a few notes on the subject might be of interest to the agricultural public.

In the early part of the season there was promise of an excellent crop in all parts of the province, but owing to unfavourable conditions later on this promise will not be fulfilled in many districts.

One of the factors which has been particularly detrimental was the excessive rainfall of July and August. Not only did the heavy rains retard growth, but in many regions it caused a wet rot of the stalks at and below the surface of the ground, so that many plants in furrows and low spots died outright. Moreover the warm, moist weather of midsummer was ideal for the development of Late Blight, and a good deal of damage has been done by this disease in various localities. An exact map showing the areas affected by Blight cannot be given, but such a map would include practically all the Western Peninsula south of London, and a strip along Lake Ontario from Hamilton to Peterboro. The north-western part of the province from Stratford up to Mount

Forest, Shelburne and Orangeville is comparatively free, as is also Simcoe Co., the Muskoka District, and the Clay Belt of New Ontario. The Niagara Peninsula is also for some reason very little touched by this disease. As the ground is exceedingly wet in all the blighted areas, a good deal of rot may be expected to occur in these fields during the fall, and indeed it is quite prevalent already in some places.

Although the northern areas are fairly free from Blight, and have not suffered so much from rain as the southern districts, yet they have been unfortunate in another way—they have had rather severe frosts in the latter part of August, and, with some exceptions, the tops have been killed all through the Muskoka and New Ontario regions. A notable exception was seen at Haileybury, where a small strip of the country was untouched though all north and south of it was badly frozen.

In spite of this the crop in the north will be fairly good, for although the tubers will not now grow much larger they will mature. As evidence of the crops that are produced in New Ontario, I may cite as an example a field seen at Earleton, where from a single hill selected at random, I took out twenty-nine tubers of table size, and still left in it several small ones.

As far as diseases other than Blight are concerned, Common Scab is the worst. It is universal, and somewhat worse than last year, owing to the wet weather no doubt. Blackleg, noted from several districts earlier in the season, does not appear to be general in the province, and there are few other diseases of

general economic importance. The hereditary non-parasitic diseases such as Leaf Roll, Curly Dwarf, and Mosaic Diseases are exceedingly scarce in our fields, and it is hoped that careful attention to the question of seed will keep us free from them in future.

THE DAIRY AND COLD STORAGE BRANCH

PROGRESS OF DAIRY RECORD CENTRE WORK

BY C. F. WHITLEY, IN CHARGE OF DAIRY RECORDS

IN the cow testing associations as originally organized in 1906, the actual testing of milk samples and the supervision of the movement locally was placed in the hands of the maker at the creamery or cheese factory; if he moved away there was apt to be a lack of continuity of the work from year to year as well as neglect to weigh and sample in the fall or early spring. There was then only one government official in charge for each province as superintendent.

RECORD CENTRES ESTABLISHED

As this was not altogether satisfactory, dairy record centres were established in 1911 with the prime idea of giving greater impetus to cow testing so as to secure quicker and more definite improvement in dairy herds. With the recorder, an official of the Dairy Division, permanently on the ground, good results have already been obtained. Records of far more cows have been kept for the full period of lactation, enabling intelligent selection of good cows to be made; far more attention is being paid to the question of feeding, both as to balanced rations and feeding each cow in proportion to her yield, for many dairy farmers are now keeping feed records; these points aid considerably in building up quickly a profitable herd.

Many pure bred dairy sires have been purchased, a large number of silos have been erected, cow stables have been remodelled so as to secure more light, cleanliness and ventilation— in these, and other ways, the direct influence of the recorder is seen.

INCREASED PRODUCTION IN HERDS

The Department is in possession of records of herds all over the Dominion which show a substantial increase in the yield of milk since the owner commenced weighing and sampling. For instance, at Avonmore, Ont., one herd of 12 cows is now up to an average of 7,982 pounds of milk per cow compared with only 6,200 pounds three years ago; this is an increase of 1,782 pounds of milk per cow. At Mallorytown, Ont., a herd of 12 cows has increased from 3,726 pounds of milk per cow in 1909 to 7,388 pounds in 1914. This is an increase of almost one hundred per cent. At St. Prosper, Que., the increase in 14 herds varies from 1,000 to 1,800 pounds of milk per cow. In one dairy record centre in Nova Scotia, there are twenty herds that show large increases in the last four years, some herds have more than doubled the yield per cow.

As the subject of cow testing has been widely and constantly dis-

cussed through the press and in farmers' meetings by officers of the Department, it is certain that there has been far more attention paid to the average dairy cow in the last few years than ever before. Many dairymen keep records privately on forms supplied by the Department. It is safe to say that thousands of farmers have affected considerable improvement in their herds as an outcome of this propaganda. The census figures bear out this contention unmistakably, for while the increase in the number of cows in Canada between 1900 and 1910 was only 7 per cent, the total production of milk during the same period increased 43 per cent.

The recorder also takes a dairy census of his district, summaries of which are published in the report of the Dairy and Cold Storage Commissioner.

In 1906 the total number of monthly tests of individual cows amounted to only 17,125, owned by 266 dairymen. In 1914 this number had been increased to 126,527, owned by 2,721 dairymen. In 1915 several recorders were able to organize new branches in their centres.

COWS TESTED IN JULY

The total number of cows tested in July was as follows:—

Ontario Record Centres	8,913
Quebec " "	5,370
Maritime " "	4,770
Saskatchewan " "	313
Testing Associations.	2,375
Total.	21,741

The accompanying table shows the location of each dairy record centre:

DAIRY RECORD CENTRES

ONTARIO

Centre:	Electoral District:
Alexandria,	Glengarry,
Avonmore,	Stormont,
Cornwall,	Stormont,
Frankford,	Hastings,
Hallville,	Dundas,
Ingersoll,	Oxford,
Kingston,	Kingston,
Listowel,	Perth,
Mallorytown,	Brockville,
North Gower,	Carleton,
Oxford Mills,	Grenville,
Perth,	Lanark,
Peterboro,	Peterboro,
Renfrew,	Renfrew,
Sunderland,	Ontario.

QUEBEC

Metabetchouan,	Metabetchouan,
Montmagny,	Montmagny,
Shawville,	Pontiac,
St. Aubert,	L'Islet,
St. George East,	Beauce,
St. Hyacinthe,	St. Hyacinthe,
St. Prosper,	Champlain,
St. Raphael,	Bellechasse,
Way's Mills,	Stanstead,
Ste. Henedine,	Dorchester.

MARITIME PROVINCES

Sussex, N.B.,	Kings and Albert,
St. Joseph, N.B.,	Westmoreland,
Antigonish, N.S.,	Colchester,
Clare, N.S.,	Digby,
Meteghan, N.S.,	Digby,
Scotsburn N.S.,	Pictou,
Truro, N.S.,	Colchester,
Crapaud, P.E.I.,	Queen's,
Kensington, P.E.I.,	Prince.

SASKATCHEWAN

Lloydminster,	Battleford.
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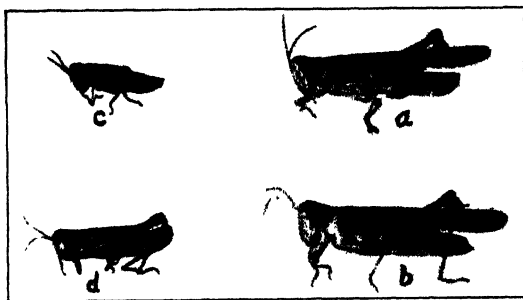
In our experience, country people as a class are probably more discriminating with regard to entertainment than their city cousins, although the contrary belief always has predominated. If agriculture in Canada must be linked up with the midway in all its glory as we have it in the West (for financial reasons), then it is time we began to organize agricultural shows on the English and Scotch basis. The matter of abolishing the unquestionably immoral effect of the midway should commend itself to our social reform leagues.
—*Farm and Ranch Review.*

THE ENTOMOLOGICAL BRANCH

LOCUST CONTROL WORK IN EASTERN CANADA IN 1915

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST, IN CHARGE OF FIELD CROP INSECT INVESTIGATIONS

DURING the present year (1915) the Entomological Branch has had excellent opportunities of further demonstrating, in the provinces of Ontario and Quebec, the value of poisoned baits to control locusts. In both of these provinces these insects have again been enormously abundant, the species responsible for the chief damage being the Lesser Migratory Locust, *Melanoplus atlantis*.



THE LESSER MIGRATORY LOCUST, *MELANOPLUS ATLANTIS* RILEY:
a, Adult male; b, adult female, c and d, young hoppers.
(Author's illustration)

Not only has our demonstration work given every satisfaction to the farmers in the districts where the work was conducted, but we have also been able to prove the value of certain entirely new poisoned mixtures, concerning which, however, more will be stated after another season's work. Some of these promise to reduce the cost of application considerably. A most important result of our recommendations was the formation by the farmers of local organizations to purchase the necessary materials for the poisoned bait and to arrange definitely for

those whose fields were infested to co-operate and apply the mixture about the same time. By purchasing large quantities of the materials required better prices, of course, were obtained and the cost of the applications appreciably reduced.

THE OUTBREAK OF 1915

Towards the end of May young locusts began to appear in noticeable numbers but owing to dull, cool weather conditions did not become active until the first and second weeks of June. From many townships and parishes in the provinces of Ontario and Quebec reports of the presence of locusts in destructive numbers were received. The crops attacked were chiefly oats, barley, timothy, buckwheat, clover, tobacco, potatoes and corn. In one instance near Ottawa about 6,000 celery plants were destroyed.

I have seen several serious outbreaks of locusts in previous years, but never until last June were the insects seen in such enormous numbers as they occurred near Bowesville, Ont., and Lanoraie, Que. In fields which were examined in both of these districts the locusts were present in countless thousands. The soil is similar in both of these localities, being of a light sandy character, and in both places are large, neglected areas which furnish ideal breeding grounds for the insects.

POISONED BAITS USED

In our work this year near Bowesville, Ont., we again thoroughly proved the value of the Kansas formula with certain modifications. The original Kansas formula is as follows: Bran 20 lb., Paris green 1 lb., molasses 2 quarts, oranges or lemons 3, water $3\frac{1}{2}$ gallons.* In 1914 the value of this mixture was demonstrated and in one field we counted, in one instance, 414 dead locusts in one square yard. In an oat field the same mixture this year (at Bowesville) killed, on an average, 184 locusts to the square yard, the largest number of dead insects found within one square yard in this field being 736. Ten counts were made diagonally across the field. In 1915, the same mixture, containing oranges instead of lemons, gave better results under similar conditions. In one experiment where 5 acres were treated the average number of dead locusts per square yard was 406, the highest count in the field being 918. The amount of water used in this experiment was $2\frac{1}{2}$ gallons instead of $3\frac{1}{2}$ gallons as mentioned above. The cost, including labour, of treating the 5 acres in this demonstration was \$1.06, being 21 cents per acre. The above mixture, with $\frac{1}{2}$ lb. Paris green instead of 1 pound, 3 oranges, and $2\frac{1}{2}$ gallons of water instead of $3\frac{1}{2}$ gallons, was distributed over 5 acres of pasture land at Bowesville and counts made four days later gave an average of 223 dead locusts to the square yard, the greatest count being 710. The cost of this treatment including labour was 19 cents per acre. The following mixture was distributed over 5

acres of heavily infested oats on 26th June, on which date the plants were from 9 to 12 inches high: bran 20 lb., molasses $4\frac{1}{2}$ quarts, Paris green 1-6 lb., water 2 gallons. The counts made four days later indicated a remarkable death rate. The ten counts made diagonally across the field gave 246, 840, 509, 473, 210, 368, 230, 1200, 616 and 450, an average of 514 dead locusts to the square yard. The cost of this application including labour was 27 cents per acre.

Many growers have reported excellent results from the use of the Kansas mixture given above and applied as recommended in our Entomological Circular No. 5. An important saving of crops has taken place in districts where the farmers organized to co-operate and treat large infested areas at the same time. The most remarkable illustration of the value of such co-operation was in St. Maurice County, Que., where following our directions, the farmers of the Parish of St. Etienne organized under the immediate guidance of the Rev. J. I. Trudel. In this parish, practically all farm land—estimated at 20,000 acres—was treated with the first mentioned mixture, using $1\frac{1}{2}$ lb. of Paris green for each 20 lb. of bran instead of 1 lb., as recommended. For this work the bran, Paris green, lemons and molasses were obtained at wholesale rates. All of the land was treated in the week beginning June 4th, at which time the locusts were about from one-quarter to one-half an inch in length. Counts were made in various fields soon afterwards and these gave from 80 to 120 to the square foot. I visited St. Etienne de Gres on June 23rd and in only one or two small areas, which had not been treated owing to the fact that they were owned by an outside corporation, could locusts in numbers be observed. In the treated fields examined very few living locusts were present and the farmers generally were quite satis-

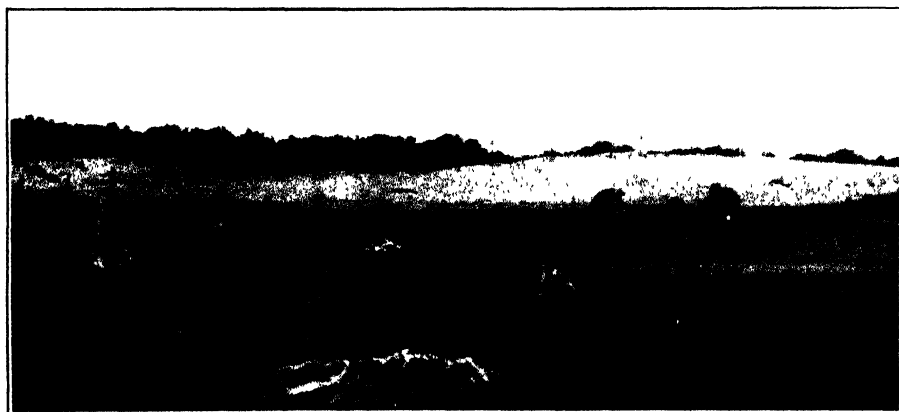
*In preparing the bran mash, the bran and Paris green are mixed thoroughly while dry. The juice of the oranges or lemons is squeezed into the water, and to this is also added the pulp and peel after cutting into fine bits. The molasses should then be added, and when dissolved the mixture should be poured on to the dry bran and poison, stirring the whole constantly so as to dampen the bran thoroughly.

fied that the one application of the poisoned bran had saved their crops from being destroyed. Of the area treated about 7,000 acres was in oats, which gave promise of a good crop at the time of my visit. The cost of the materials for the application was about 15 cents per acre. The extent to which the successful treatment of the locusts is appreciated by the farmers in these districts is indicated by the fact that many farms had been abandoned owing to the complete devastation caused by the locusts in previous seasons. Sandy areas that had been reclaimed had reverted to the

sufficient to treat five acres. It is not necessary that the mixture be applied to all of the land, but by scattering it thinly here and there throughout the fields, sufficient of the bait will be distributed to attract the locusts from considerable distances. The best results in destroying these insects will be obtained before they reach the winged state and are of about the size shown in *c* and *d* of the figures on page 937.

VALUE OF FALL PLOUGHING

There are large neglected areas in certain parts of Ontario and Quebec



NEGLECTED AREA IN QUEBEC PROVINCE. SUCH FIELDS ARE IDEAL BREEDING GROUNDS FOR LOCUSTS. (Original)

original condition as the locusts had destroyed the grasses and vegetation binding the sand and preventing its drifting.

Farmers living in districts where crops have this year been ravaged by locusts are urged before next spring to properly organize a locust campaign, and when it is seen that the young hoppers are appearing in destructive numbers the materials for the poisoned bait should be ordered promptly and distributed among the farms so that the applications be made in the fields early in the morning (before or very soon after sunrise) on or about the same day. Twenty pounds of bran is

provinces which make ideal breeding grounds for locusts. The female locust deposits eggs freely in packets, or pods, chiefly in old neglected pasture lands, where the soil is dry and light and vegetation scanty. Such deposition takes place in late summer and in autumn. It is important, therefore, that such old pasture or meadow land known to attract locusts for the purpose of egg-laying, should be ploughed to a depth of at least six inches after the eggs have been deposited. The ploughing should be done in late autumn or in spring before May, in order that as many eggs as possible will be buried deeply, thus prevent-

ing the young hoppers escaping to the surface. If the ploughing is done in spring it is wise to follow this immediately by harrowing. Shal-

low ploughing, which would undoubtedly break up many of the egg pods, would not be thorough enough, so is not to be recommended.

THE HEALTH OF ANIMALS BRANCH

ORDERS RESPECTING FOOT AND MOUTH DISEASE, IMPORTS OF ANIMALS, ETC., SEPTEMBER, 9th 1915

UNDER the provisions of "The Animal Contagious Diseases Act," for the period of three months from September 9, 1915, the importation or introduction into Canada of animals, or of the flesh, hides, wool, hoofs, horns or other parts of animals, or of hay, straw, fodder or manure, from the States of Alabama, Alaska, Arkansas, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North and South Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, West Virginia and Wisconsin, is hereby prohibited, provided that,—

(1) Horses may be admitted upon the receipt of a special permit from the Veterinary Director General.

(2) Race horses shipped by express, consigned to an incorporated Jockey Club or Racing Association, may be admitted without permit when complying with other regulations of the department.

(3) Dogs, with the exception of those used for herding cattle or sheep, may be admitted.

(4) Cats, pet birds, live pigeons and menagerie or wild animals, except deer, may be admitted.

(5) Live poultry may be admitted when accompanied by the affidavit of the owner or shipper that the said

poultry have come from a state not under federal quarantine.

Dressed poultry may be admitted from any part of the United States except closed areas under federal quarantine, each shipment to be accompanied by a certificate of an officer of the Bureau of Animal Industry.

Transit of live poultry through Canada from one United States point to another is permitted in car lots when the shipment is accompanied by the affidavit of the owner or shipper that the poultry are the product of a state not under federal quarantine. Cars to pass the inspection of officers at the boundary as to sanitary condition and freedom from hay, straw, or chaff.

(6) One-day-old chicks may be imported from any part of the United States.

The requirements with regard to hay and straw packing must be observed. Crates containing either hay or straw will be refused entry.

(7) Cured and cooked meats and tallow, butter and eggs, may be imported.

(8) Dressed meats, either fresh or cured, in car lots, en route from one United States point to another, may be permitted to pass through Canada in bond in sealed cars, provided also that the steps and running boards of such cars have been disinfected to the satisfaction of an inspector of the Department of Agriculture at the port of entry into Canada.

Dressed meats, either fresh or cured, may be admitted when accompanied by a certificate of an officer of the Bureau of Animal Industry that the shipment has not originated in a closed or exposed area of a state under federal quarantine, provided shipments do not include tongues, heads or feet in the fresh unpickled state.

The importation of dressed hogs from the United States of America is permitted under the following conditions:—

Hogs must have been killed and dressed in an establishment under federal inspection.

Carcasses must have been singed, and feet, head and viscera removed, including kidneys, tenderloins and leaf lard.

Car-lots only will be admitted.

Cars are to be sealed by a Bureau of Animal Industry Inspector, consigned to a Canadian establishment under inspection and received there with unbroken seal. Seals are to be broken by the Inspector of the Health of Animals Branch stationed at the establishment.

Importers of dressed hogs under this amendment will be required to export every portion of the hogs so imported, with the exception of such small trimmings as are rendered, or lean trimmings, which must be cooked before being offered for sale.

After unloading, the cars are to be cleaned and disinfected to the satisfaction of the inspector at the expense of the importer.

These shipments must be accompanied by a certificate that they consist only of singed carcasses, consigned to an abattoir under federal inspection. This certificate must be presented to the Veterinary Inspector at the boundary.

(9) Milk and cream may be imported provided that same are accompanied by a certificate of pasteurization signed by an officer of the Bureau of Animal Industry or

by a local health officer. Cans for the transportation of milk or cream may be admitted only when accompanied by a certificate of sterilization signed by an officer of the Bureau of Animal Industry or by local health officer.

(10) Hides from countries other than the United States may be admitted to Canada from the United States when accompanied by an affidavit of the shipper that the shipment is of foreign origin, and that the said hides have not come in contact with domestic hides of the United States.

(11) United States hides may only be admitted under the following conditions:—

- (a) That they must be accompanied by a certificate of an officer of the Bureau of Animal Industry that they have been thoroughly disinfected under the regulations of the said Bureau of Animal Industry, or
- (b) That they have been taken from animals slaughtered prior to August 1st, 1914, and have ever since that date been stored away from contact with other hides or live animals. (Affidavits to this effect must accompany shipment), or
- (c) That they have been taken from animals slaughtered outside of the States under federal quarantine, that is, outside the area comprised by the following States: Connecticut, Delaware, District of Columbia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Minnesota, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, New Hampshire, Virginia, West Virginia and Wisconsin. (Affidavit to this effect must accompany shipment), or
- (d) That they are shipped in car lots consigned to tanners or tanning companies, after having received ante-mortem and post-mortem federal inspection of the Bureau of Animal Industry of the United States. Such shipments must be accompanied by a certificate signed by an officer of the Bureau of Animal Industry that the hides are from animals submitted to inspection as aforesaid.

Cars containing shipments of hides under (d) of paragraph 11 of this Order must be disinfected under the

supervision of an officer of the Health of Animals Branch of the Department of Agriculture before being used for other purposes.

Men employed in handling and unloading any shipments of the kinds above described will be required to wash and disinfect their hands before leaving the premises.

(12) Hides, in sealed closed cars may be allowed transit through Canada from one United States point to another, provided the steps and running boards are disinfected to the satisfaction of an officer of this Department previous to entering Canada.

(13) Pickled pelts of sheep or goats with wool or hair removed, packed in casks or bundles, may be admitted.

(14) Skins of wild fur-bearing animals, tanned or untanned, may be admitted.

(15) Tanned sheep skins with the wool attached may only be admitted after fumigation with formaldehyde. Importers will be required to furnish all the necessary disinfectants and conveniences for the carrying out of this Order.

(16) Tanned sheep may be admitted if accompanied by the affidavit of the shipper that they were derived from sheep killed prior to 1st August, 1914, and have not been in contact with prohibited wools or skins.

(17) The importation of pelts in the uncured state is prohibited.

(18) Wools from countries other than the United States, in the original bales, may be admitted from the United States when accompanied by the affidavits of the owner that the bales have not been stored with or have come in contact with prohibited wools or pelts of the United States.

(19) Fleece wool shorn from living sheep during or previous to the spring of 1914 may be admitted if it has not been mixed or stored with other classes of wool prohibited by this

Order. The affidavit of the shipper to this effect will be required.

(20) Wool, which is accompanied by the certificate of an officer of the Bureau of Animal Industry to the effect that it has been disinfected with formaldehyde under his supervision, may be admitted.

(21) Pulled wool may be admitted provided it has been scoured and after the scouring process has been dried at a temperature of 160 degrees F. (Affidavit to this effect must accompany each shipment.)

(22) Pulled wool, unscoured, may be admitted if accompanied by an affidavit that it was taken from the pelts of sheep killed before the 1st August, 1914, and has not come in contact with prohibited wools.

If deemed necessary at any time any shipment of wool may be required to undergo disinfection by means of formaldehyde, under the supervision of an officer of this Department.

(23) Wool in car-lots, destined from one United States point to another, may be permitted to pass through Canada under the usual regulations governing sealing and disinfecting cars.

(24) Hair from countries other than the United States may be admitted under the same conditions as wool.

(25) Hair from the United States may be admitted when accompanied by a certificate of an officer of the Bureau of Animal Industry stating that the said hair is free from infection.

(26) Feathers of domestic poultry securely packed and consigned to manufacturers, or their agents, may be admitted if accompanied by the affidavit of the shipper that the said feathers have not come from infected premises.

(27) Hay may be imported from the Upper or Northern Peninsula of the State of Michigan and from Sugar Island, in the County of Chippewa,

in the State of Michigan, when accompanied by the affidavit of the owner or shipper that the said hay is the product of the above described portion of the State of Michigan, and has not been exposed to the infection of foot and mouth disease.

Hay from the State of Vermont will be admitted provided each shipment is accompanied by an affidavit that the hay is the product of that State.

(28) Straw or hay used in packing fragile merchandise imported from foreign countries via the United States may be admitted provided the goods are contained in their original packages. (Affidavits to this effect must accompany each shipment.)

(29) Hay or straw used in packing merchandise from the States mentioned in the first paragraph of this Order may be admitted, provided the shipment is accompanied by the affidavit of the shipper, or of a Bureau of Animal Industry Inspector, stating that the said hay or straw was harvested and stored in an area that has not been under federal quarantine for foot and mouth disease, or else that the said hay or straw has been fumigated with formaldehyde, as required by the Bureau of Animal Industry.

(30) Hay in sealed, closed cars may be allowed transit through Canada from one United States point to another, provided the steps

and running boards are disinfected to the satisfaction of an officer of this Department previous to entering Canada.

(31) Pulverized and sterilized sheep manure in transit through Canada from one United States point to another may be admitted in boxes and barrels in closed, sealed cars.

(32) Animals and their products, also hay and straw, may be imported into Canada from the States of North Dakota, South Dakota, Montana, Washington, Oregon, Idaho, Wyoming, Nebraska, Colorado, Utah, Nevada, California, Arizona, New Mexico, Oklahoma and Texas, provided they are accompanied by the affidavit of the owner or shipper that they are the product of one of the above-mentioned States, and have not been unloaded in any State other than one of the above-mentioned States. In the case of live animals, the usual requirements of the Department as to quarantine, health certificates, or mallein or tuberculin tests must be observed.

The Order under the Animal Contagious Diseases Act of the 9th day of May, 1915, and the amendments thereto are hereby repealed and replaced by the foregoing.

Dated at Ottawa, this ninth day of September, nineteen hundred and fifteen.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

THE SEED BRANCH

NEW SPECIAL GRADES FOR SEED GRAIN

BY GEORGE H. CLARK, B.S.A., SEED COMMISSIONER

THE new Government interior terminal elevators at Calgary, Moose Jaw and Saskatoon are splendidly equipped for cleaning and storing seed grain. They were designed to meet a very

real need of proper facilities to make practicable the handling of a special grade for wheat, oats and barley that are clean and suitable for seed. These special grades are now established as set forth in the following

Order in Council, dated at the Government House, Ottawa, the 30th September, 1915:--

WHEREAS it is deemed desirable in the execution of the powers conferred by Section 2 of the Seed Control Act, that special grades of grain should be established exclusively for seed purposes without affecting, of course, the commercial grades fixed under the authority of the Canada Grain Act;

AND WHEREAS the primary purpose of providing a special grade of grain that may be suitable for seed is to create a substantial supply of Red Fife and Marquis wheat, white oats and six-rowed barley that is clean, of superior quality and reasonably pure as to variety or type of grain; so that such supply of grain may conveniently be made available to farmers, seed merchants or grain dealers who sell seed at the minimum cost; the main object is the improvement of field crops:

THEREFORE the Governor General in Council, under and in virtue of the provisions of Section 2 of the Seed Control Act is pleased to order and it is hereby ordered as follows: -

The nomenclature of grades of grain for seed purposes shall be as follows --the same having been revised and approved by the chief inspector of grain, viz.:--

No. 1 Canada Western seed oats shall be composed of 95 per cent of white oats, sound, clean and free from other grain; shall be free from noxious weed seeds within the meaning of the Seed Control Act, and shall weigh not less than 36 pounds to the bushel.

No. 3 Extra Canada Western seed barley shall be composed of the six-rowed variety, sound, plump, free from other grain, of fair colour, free from noxious weed seeds within the meaning of the Seed Control Act, and shall weigh not less than 48 pounds to the bushel.

No. 1 Manitoba Northern seed wheat shall be composed of 85 per cent of Red Fife or 85 per cent of Marquis wheat, sound, clean and free from other grain, and free from noxious weed seeds within the meaning of the Seed Control Act, weighing not less than 60 pounds to the bushel.

For seed purposes Red Fife and Marquis wheat shall be kept separate.

No grain shall be accepted for seed which will require a large dockage to clean.

Seed inspectors shall observe the foregoing regulations in the grading of grain for seed purposes, nevertheless inasmuch as the operations of seed inspectors are dependent upon and follow after the operations of grain inspectors in respect of the grain to be examined as to suitability for seed purposes, the seed inspectors will remain subject to the approval of the chief inspector of grain or his deputy in all matters of procedure and prompt attendance to duties and for efficiency and accuracy of technical work done seed inspectors shall be responsible to the Minister of Agriculture.

Seed inspectors are authorized to certify ex-elevator the grain graded for seed purposes pursuant to the foregoing regulations.

(Sgd.) RODOLPHE BOUDREAU,
Clerk of the Privy Council.

These grades will be given for the crop of 1915 only on car lots of grain that are inspected into the Government interior terminal elevators beforementioned, and will become effective at the close of navigation or about December 1st. Warehouse receipts and certificates of grading will be issued the same as for the standard commercial grades.

It is not anticipated that the operation of these seed grades will perceptibly alter the quality or value for milling purposes of the commercial grades of grain, as cars of grain for seed will be selected primarily on the basis of freedom from noxious weed seeds.

With the excellent character of the grain crops in the Prairie Provinces this year, a large quantity of seed grain of superior quality will doubtless be made available at an advance in price over commercial grades only sufficient to meet the extra dockage required and the cost of cleaning, storing and sacking when the latter is desired by purchasers.

THE LIVE STOCK BRANCH

A MOVEMENT TO NATIONALIZE AND ADVERTISE CERTAIN GRADES OF CANADIAN EGGS

BY W. A. BROWN, B.S.A., IN CHARGE OF THE POULTRY DIVISION

THIS year for the first time in the past twelve years, Canada's home grown egg supply has exceeded her demand. Fortunately, an outlet for the surplus at satisfactory prices has been found in the British market. Had not the usual supplies for this market been largely cut off, it is stated that it would have been difficult for Can-

grades of Canadian eggs in the British market, but also with a view to bringing about an improvement in the quality of eggs handled in the Interprovincial trade, that the Live Stock Branch urged upon the Canadian Produce Association the adoption of the "Standards for Canadian Eggs" outlined in the March issue of THE AGRICULTURAL GAZETTE.



EXHIBIT OF DOMINION LIVE STOCK BRANCH AT THE CANADIAN NATIONAL EXHIBITION, TORONTO

adian dealers to have disposed of Canadian eggs to advantage owing to the great variability in the produce being sent forward.

It was not only with the view of providing for this emergency, and incidentally establishing a national reputation for certain standard

During the past summer, considerable progress has been made in having the Canadian trade adopt these standards in actual commercial practice. It was early evident, however, that some further demonstration was necessary before the producers and consumers would ap-

preciate the significance of these standards, and with this end in view representations were made to the Canadian National Exhibition with the object of having offered in their premium list prizes for classes of eggs graded in accordance with Canadian standards.

This resulted in an exhibit at the Canadian National Exhibition of some 7,000 dozen eggs, all judged according to the "Standards for Canadian Eggs," the various classes

was in the hands of Prof. W. R. Graham, Ontario Agricultural College, and officers of the Poultry Division of the Dominion Live Stock Branch. It is now an established fact that eggs have been standardized, and may be purchased according to an authorized grading. With this ultimate goal in view the Live Stock Branch has been working for the past three years.

The exhibit too was valuable from the standpoint of the visible signs



EGGS ARRANGED AND JUDGED ACCORDING TO STANDARD FOR CANADIAN EGGS

being so arranged as to cover those grades given in the standards for freshly gathered eggs. That the effort was successful is evidenced by the number of eggs exhibited, constituting the largest exhibit of eggs ever got together on the American continent.

Two classes were provided, one open to producers, and the other, a commercial class, open to all. One, six, twelve, and thirty dozen lots were provided for in the various sections, covering specials, extras, No. 1's and No. 2's. The judging

of improvement in the quality of produce shipped by producers. In connection with this end of the Live Stock Branch's activities the electrically lighted models illustrating the right and the wrong way of producing and marketing eggs have played an important part. The models are a never wearying attraction for producer and consumer alike, and have been the direct cause of many much needed reforms in the management of farm poultry.

The egg exhibit and the models—illustrations of which appear on

these pages—with the candling booth between the two, formed a most complete educational exhibit for both poultry producers and consumers.

If further proof were needed of the value of work accomplished by our Co-operative Egg Associations, ample evidence was available by a perusal of the names on the prize tickets attached to the winning cases of eggs. The Dundas Co-operative Association, the Prince Edward Island Co-operative Egg and Poultry Association, the Lansdowne Egg Association, the Ormond Association and the Wyman Egg Association, were all among the winners, in classes too, that were open to all. Tradesmen, in the majority of the classes, had to take second place to the Co-operative Egg Associations and individual producers.

The consumer has now been given a demonstration of what should be offered for sale by retailers and dealers. In addition, many have candling appliances in their homes, and are prepared to test the eggs they buy. This will have a far reaching effect and payment for eggs on a quality basis become more

general than ever before. With a consumer looking for and demanding eggs graded according to the "Standards for Canadian Eggs," all handlers of eggs right through to the producer must fall in line.

There are still many buyers through the country who pay no attention to the candling of the eggs they handle, but these men are awakening. One of them operating in Ontario called at the exhibit during the exhibition and asked for a candling appliance, and further handed in the names and addresses of those from whom he bought eggs, so that they too might candle their eggs and receive payment according to the grades sold.

It is expected that the action of the Canadian National Exhibition in placing classes for eggs on the prize list will serve as a precedent, and other exhibitions will provide egg classes along similar lines.

Realizing the importance of having eggs produced and marketed in the proper way, and impressing this fact on producers, the Live Stock Branch is making arrangements to display the models, and give candling demonstrations at other fall exhibitions.

LOCATION OF PURE BRED ANIMALS

IN order to avoid the possibility of the distribution policy of the Dominion Live Stock Branch over-lapping that of the Ontario Department of Agriculture, all pure-bred sires which had during the last two or three years been loaned to Associations in New Ontario by the latter Department, have this summer been purchased by the Dominion Live Stock Commissioner.

The Associations concerned retain the animals now in their hands and will be affected only in so far as the regulations of the Live Stock Branch under its distribution policy differ from those which had been laid down by the Provincial Department.

Twenty-four bulls, four boars and sixteen rams were involved in the transaction, located as follows:

<i>Algoma</i>	Two Shorthorn bulls, one Holstein bull, one Berkshire boar, four Shropshire rams.
<i>Kenora</i>	One Holstein bull.
<i>Manitoulin</i>	Five Shorthorn bulls.
<i>Parry Sound</i>	Two Shorthorn bulls, one Berkshire boar, five Shropshire rams, three Leicester rams.
<i>Rainy River</i>	One Shorthorn bull, one Ayrshire bull.
<i>Sudbury</i>	Three Shorthorn bulls, two Berkshire boars, four Shropshire rams.
<i>Thunder Bay</i>	Two Shorthorn bulls.
<i>Timiskaming</i>	Six Shorthorn bulls.

PART II

Provincial Departments of Agriculture

IMPROVEMENT OF DAIRY HERDS

IN response to the following questions, addressed by the Editor of THE AGRICULTURAL GAZETTE, to leading dairy officials of each Provincial Department of Agriculture, and of the Ontario Industrial Farms and the Colony Farm of British Columbia, the replies herewith published were received:—

1. At what age are heifers desired to come into milk the first time?
2. In the rearing of heifers, what do you regard as the minimum production of milk and fat during the first milking period for each breed kept, that justified maintaining them in the breeding herd?
3. How long are heifers milked the first lactation period, and how long are they then allowed to go dry?
4. What improvement has been made in the average production of the herd of each breed kept in a given number of years?
 - (a) Two-year olds?
 - (b) Three-year olds?
 - (c) Mature cows?

In the letter asking for replies to the foregoing questions it was explained that they were rather suggestive than final and that they were set down with a view of assisting in bringing together information of a uniform character.

OKA AGRICULTURAL INSTITUTE

BY FR. M. ISIDORE, PROFESSOR OF ANIMAL HUSBANDRY

THE abundance or the scarcity of food is one of the main guiding factors with us in selecting the time of the year when heifers should calve for the first time. It appears to me to be of vital importance that this first calving should coincide with a period of plentiful feed, as a splendid opportunity is thus afforded for the development of the milking qualities, thus insuring a high production of milk. Therefore, to prepare heifers for calving at the time when food is

plentiful, or just about that time, is a wise plan, the advantage of which has been amply demonstrated by experience.

WHEN HEIFERS CALVE

Generally our heifers are made to calve at two and a half years of age, or even three years, rather than two years. Premature pregnancy is apt to retard the growth of young animals. Of course, there are exceptions to this rule. For instance, a

heifer which has grown very quickly and which is fairly large, may, without any risk of injury, calve at two years old. Under this principle, a heifer which is born in the fall should be ready to calve during her second spring, that is to say when she is about thirty months old, and the next calving should take place at the beginning of the winter, if convenient. This arrangement enables us to milk the young heifers for a long time at their first calving, and thus help them to acquire the habit of giving milk during a long season. Once acquired, this persistency in milking may be perpetuated among her progeny and become a hereditary quality. If this first lactation period could be made twelve months or more it would be all the better for the individual heifer as well as for the breed, as the milking qualities of every individual as well as of the breed depend upon the length of this first lactation period.

When the heifer has calved in the spring, the second parturition may take place in the winter or in the fall; thus a fairly long time will elapse between the first and second parturitions, which will be favourable to the growth of the young mothers, who will thus regain what they might have lost through a premature pregnancy.

A GOOD DAIRY COW

A heifer which has calved at the age of $2\frac{1}{2}$ years should give the assurance that she will make a good dairy cow, in order to be kept in the herd. In the improvement of the dairy herd, I believe it is important to aim at a certain quantity of milk for cows of various ages. Of course such yields may vary according to a number of circumstances—the system of culture adopted on the farm, the fertility of the land, and the ambition of the breeder.

A heifer $2\frac{1}{2}$ years old, belonging to the French-Canadian breed,

should give a minimum yield of 4,000 pounds of milk and 170 pounds of butter fat during the first period of lactation. At the age of $3\frac{1}{2}$ years, or 4 years, she should give 5,000 pounds of milk and 220 pounds of butter fat; lastly, the yield of a mature cow should reach 6,000 pounds of milk and 270 pounds of butter fat.

We are a little more exacting as regards the Ayrshire cow, specially as regards the quantity of milk given at various ages. An Ayrshire cow $2\frac{1}{2}$ years old must give 5,000 pounds of milk and 170 pounds of fat per year; 6,000 pounds of milk and 228 pounds of fat at $3\frac{1}{2}$ or four years old. The mature cow should give 7,500 pounds of milk and 300 pounds of fat.

These figures represent the minimum yields required. Of course individual cows give much higher yields of milk, fat or butter. For instance, looking through the records of our herd I find that an Ayrshire cow has given 14,000 pounds of milk in a lactation period while the yield of a Canadian cow has been as high as 11,000 pounds.

FIRST PERIOD OF LACTATION

As already stated, when answering the first question, we make the first period of lactation as long as possible, by feeding our cows well so as to develop the milking quality. The length of time during which heifers stop giving milk depends upon the time at which the second calving takes place; this period of rest may vary from three to four months.

By following the above methods we were able in three or four years to considerably increase the milk yield of the cows in our herd, the average production having passed from 5,000 to 8,000 pounds of milk—a fact which clearly shows the efficiency of this method in the result obtained in a comparative experiment.

A heifer calving at about two years of age and milked only for a short period after the first parturition, although receiving the same treatment as the others, gave only 6,000 pounds of milk. Her growth was also retarded. We are not willing to repeat the experiment.

In a general way, it may be concluded that the results obtained in dairying are always in proportion to the amount of rational and judicious care and of the efforts that are made to keep the herd in the best condition for the production of milk.

MACDONALD COLLEGE

BY H. BARTON, B.S.A., PROFESSOR OF ANIMAL HUSBANDRY

WE try to have our Ayrshire and French Canadian heifers freshen for the first time when they are from 32 to 36 months of age; Holsteins and Shorthorns sometimes at a younger age if they are well developed, but seldom under 30 months.

The minimum production of milk and fat during first milking period necessary to justify a heifer being maintained in a herd is something that varies a great deal, depending upon a number of other considerations. In other words while the first year's milk and fat yield is of first importance it is not the only and final basis of deciding whether a heifer will be retained or not. As a general average, if heifers do not produce at least the following yields we are disappointed in their performance:—

	Lb. Milk	Lb. Fat
Holsteins.	8,000	270
Ayrshires	7,000	215
French-Canadians.	5,000	215
Shorthorns...	5,000	175

We plan to give our heifers a long first lactation period and milk them well up to the year, at the same time giving them a rest of nearly two months depending upon their condition.

Last year our herd average for records completed during the year was as follows:—

	Lb. Milk	Lb. Fat
Holsteins.	11,291	351
Ayrshires	9,393	342 5
French Canadians	7,741	308 1
Shorthorns (large proportion heifers)	6,267	250 4

Our Ayrshires show an increase of nearly 2,000 lb. in seven years, while Holsteins and French-Canadians are about 1,000 lb. better than averages of four years ago. The Shorthorn average is not comparable with that of previous years because of a larger proportion of heifers, but for the mature cows the increase in production average is similar to that of the French-Canadians and Holsteins.

ONTARIO INDUSTRIAL FARMS

BY S. E. TODD, B.S.A., DIRECTOR OF FARMS

OF the twelve public institutions under the direction of the Provincial Secretary of Ontario, the Honourable W. J. Hanna, now maintaining dairy herds three have been established within

the last three years and one four years. Of the remainder, four have only started to breed their own stock; previously, they bought what they required. All are now breeding and recording systematically so

that in a couple of years hence much more valuable data will be collected than is available at present. I shall endeavour to answer the questions submitted in the main from data at hand of the herds at the following Institutions:—Ontario Reformatory, Guelph, milking herd, 80; Hospital for Insane, Hamilton, herd, 55; at Brockville, herd of 40; at London, herd of 40; Hospital for Epileptics, Woodstock, herd of 28, all Holsteins and Holstein grades.

(1) As the age at which heifers are desired to come into milk for the first time is a moot question we have allowed our farmers to follow their own theories, in part for the sake of the experimental experience gained. We are gradually coming to the conclusion that from twenty-six to thirty months is the proper age, varying with the development of the heifer. One of our most skilful herdsmen aims to freshen his heifers at from twenty-four to twenty-eight months, another very successful man, at from thirty to thirty-two months.

(2) As to what we regard as the minimum production of milk and fat during the first milking period for each breed kept that justifies maintaining the cow in the breeding herd, I would say that as we have, except at one Institution, been looking to milk production rather than butter fat, we have not culled closely on fat test. At the hospital at Penetang we have a herd of Ayrshire grades, established about two years, where we are setting a minimum of six thousand pounds in three hundred and forty days for heifers. Indications are that in the course of a few years grading up, by using high quality sires we shall be enabled to set a seven thousand pound minimum. For the Holstein herds we have established a minimum of seven thousand pounds. At the Hospital at Whitby, we have a milking shorthorn grade herd and have established a six thousand

pound minimum. For the butter producing Holstein-grade herd at the Ontario Reformatory we have established a minimum fat production of 3.3 average for the lactation period.

(3) A study of the attached table will answer the question as to how long heifers are milked the first lactation period and the length of time they are then allowed to go dry. We favour running our heifers from 360 to 390 days, but are allowing our farmers to experiment along this line. The period dry is intended to be about sixty days.

(4) Regarding the improvement that has been made in the average production of the herd of each breed kept in a given number of years, I would say that at the Ontario Reformatory the average gain of two-year-olds from 1913-1915, inclusive, has been about 1,000 lb. per year; for three-year-olds, 1,500 lb. per year, and for mature cows, 2,500 lb., in the three years. This herd has been rapidly building up and our rate of increase in future will probably be slower. Reference to the table will show the gain of two-year-olds for three years. At the hospital at Brockville the average gain of two-year-olds between three years ago and last year has been one pound per cow per day; three-year-olds, two pounds per cow per day, and of mature cows, four pounds per cow per day. For the last three years our total cows, numbering from 380 to 400 per year, have made an average gain per cow per year of from 550 lb. to 580 lb. of milk. At Hamilton, Guelph and Woodstock the average fat production of mature cows has been 3.4 to 3.8 per cent, a minimum of 3.0 and a maximum of 4.6 with 9,934 lb. milk and 10,786 lb. respectively. One cow gave 18,069 lb. milk in 330 days, average fat test, 3.6. In discussing standards it is well to remember that judgment must be used. One heifer, well developed and apparently normal, that gave less than 5,000 lb. during the first lacta-

tion period has just completed her third period with over 10,000 lb. Some cows are slow to develop. However, general rules may safely be followed in bringing up standards for production.

RECORDS OF DAIRY HERDS
FIRST LACTATION PERIOD

HERD No.	Year	Average No. Heifers	Age Freshened	Average Production	Average No. Days Milking	Period Dry
			Months	Lb.		Days
1	1913	8	26	7,100	298	22-93
1	1914	4	26	9,171	308	22-93
x 1	1915	5	26	4,817	139	22-93
2	1912	.	24	5,418	301	61
2	1913	..	24	6,251	329	61
2	1914	..	24	6,764	356	61
3	1913	11	30	7,770	370	55
3	1914	4	24	7,763	315	55
3	1915	9	30	10,300	425	55
4	3 yrs.		30	7,500	395	60-75
5	3 yrs.		27-32	7,649	334	30-70

x Lactation period not completed.

ONTARIO AGRICULTURAL COLLEGE
BY A. LEITCH, B.S.A., LIVE STOCK INVESTIGATOR

IT has been the practice here for years past to have all dairy heifers drop their first calves at about 2½ years old except in case of Jersey heifers. This breed as a rule drop their calves at about 2 years old, due to the fact that the Jersey heifer matures a little earlier than do those of the other dairy breeds. In the case of the few Shorthorns which have been placed in the dairy herd within the last two years, it has been the practice to have them calve at about three years of age.

2. "In the rearing of heifers what do you regard as the minimum production of fat during the first milking period for each breed kept that justifies maintaining her in the breeding herd?"

The following figures are subject to some adjustment depending on the conditions under which any certain animal milks throughout the year:

Breed:	Lb. Milk	Lb. Fat
Holsteins	6,000	185
Ayrshires	4,500	170
Jerseys	3,750	170
Shorthorns	3,000	110

In the case of a heifer coming into milk very young a smaller minimum production would probably be advisable. In the case of a heifer having sickness or injury of any kind the minimum could be easily reduced, but as a general rule I should hesitate to retain any heifer which produced less in her first year than the requirement stated above, provided the heifer milked throughout the year without any injury or illness.

3. Provided heifers drop their first calves at about the age mentioned in the answer to question No. 1, we advise having them drop their second calf at about twelve months from that date; in which case they are milked to within two months or six weeks of their second calving. The habit of persistence in milking

is fixed in a dairy animal in her first lactation period. Consequently it is wise to have her milk at least ten months in that first period, even though the amount of milk given in the later part of this ten months may

not pay for the labour involved.

4. The following statistics show the improvement that has been made in the average production of the herd of each breed kept in a given number of years:--

	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
HOLSTEINS:										
Mature										
No.	7	6	8	9	9	9	9	9	7	7
Days in milk..	285	260	*308	302	303	303	295	304	320	320
Lb. milk	7,714	7,923	10,168	9,999	9,901	10,280	10,003	9,738	10,210	11,551
" fat.	264	274	380	342	345	338	331	322	341	365
3-yr. old										
No.	2	1	1	3	2				2	3
Days in milk..	347	*309	338	309	328				282	
Lb. milk	5,809	11,025	9372	7,908	7,760				9,161	10,817
Lb. fat	192	397	318	249	268				279	357
2-yr. old										
No.		1	2	1		2	2	4	4	3
Days in milk..		165	301	193		192	273	296	327	351
Lb. milk		4,878	7,576	6,053		4,825	6,144	7,594	9,176	10,077
" fat.		164	236	182		165	227	237	288	345
AYRSHIRES:										
Mature										
No.	2	1	1	4	5	7	7	4	6	3
Days in milk..	263	233	365	295	302	271	282	327	289	315
Lb. milk	5,508	4,390	6,940	7,238	7,917	7,312	6,818	6,977	6,828	8,101
" fat.	205	168	285	289	323	287	262	251	256	303
3-yr. old										
No.		3	1	1	1			1		3
Days in milk..		230	308	304	326			295		333
Lb. milk		4,464	7,283	9,109	7,204			5,824		7,342
" fat.		182	302	333	315			240		275
2-yr. old										
No.	1			1		1	1	4	1	
Days in milk..	174			340		187	256	316	277	
Lb. milk	3,742			7,011		3,919	5,425	5,894	5,737	
" fat.	143			283		146		232	218	
JERSEYS:										
Mature										
No.	1	1	1	4	5	6	5	4		2
Days in milk..	300	274	252	361	325	315	282	305		291
Lb. milk	6,559	3,952	5,263	5,940	5,681	5,748	6,014	5,244		5,124
" fat.	284	172	227	290	282	275	272	245		319
3-yr. old										
No.	2			1						1
Days in milk..	349			302						265
Lb. milk	4,142			3,658						3,165
" fat.	200			182						183
2-yr. old										
No.								1		
Days in milk..								330		
Lb. milk								4,169		
" fat.								258		

*These high records are due to the fact that one of the cows made 11,025 lb. milk in 1906 and 20,000 lb. in 1907, bringing the average up considerably above normal.

MANITOBA AGRICULTURAL COLLEGE

BY JAS. M. BROWN, B.S.A., LECTURER IN ANIMAL HUSBANDRY

WHEN one considers the period of years in which dairying as a specialized branch of farming has been practised by civilized communities, it is rather surprising to find how little definite knowledge there is regarding certain phases of the breeding and selection of dairy stock.

The fact is that there is yet much experimental work to be done in order that the mass of conflicting opinions and beliefs may be narrowed down and the uninitiated have some reliable information to be guided by. It may be that some of the practices which we now follow will in the light of fuller knowledge give place to others and in the meantime we shall endeavour to profit by opinions based on experience.

The time-honoured question as to the age at which heifers should begin their first lactation period permits of no definite answer. Such considerations as breed, method of feeding, nature of the soil, and inherent capability for growth and development enter in to upset what may be established as a general rule, so that each animal presents to the breeder a separate problem in itself. There is a widespread belief that by breeding heifers at an early age the milking tendency becomes the better established.

It may be so; in the opinion of the writer there is not yet sufficient experimental evidence to prove that it is so, and, in the meantime, we find that the practice has in many cases led to harmful results, for breeders in their desire to establish the milking habit are prone to overlook the necessity of maintaining size and vigour; and what shall it profit one to obtain milking qualities in one

generation if size and constitution be lost in the next? True, it is argued that if sufficient rest and liberal feeding are allowed between the first and second lactation periods, that the arrested development incident to early breeding becomes then in its nature temporary. We have observed, however, that in many instances, it does not. In view of these considerations it has hitherto been and will continue to be the practice at the Manitoba Agricultural College to have heifers come into milk at the age of 2 years and 6 months, or 2 years and 8 months. But, as stated below, there are always exceptional cases. From time to time there are heifers showing exceptional development for age, being strong of bone and horn, and which, if allowed to go until the age of 2 years and 8 months before bearing the first calf, would be lacking in dairy qualities.

In the first lactation, heifers are milked fully as long as mature cows and this practice is maintained even when towards the end of the milking period the milk yield is so small as to warrant drying off in the case of a mature cow.

Heifers being mature at the first freshening, no rest is given between lactation periods. Selection for milking qualities is constantly being made, but because of the comparatively recent establishment of the herd this selection is not yet quite as rigid as it is expected one day to be.

At the present time, however, in a milking period of eight months Holstein heifers showing a yield of less than 5,000 lb. of milk, or Ayrshires and French-Canadians less than 4,500 lb. of milk, would not be retained in the herd.

ALBERTA

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

HAVING four different breeds on our demonstration farms, we find that the principles that apply to the handling of one will not always apply to another, for instance, Shorthorn and Holstein herds seem to develop faster than the Ayrshire and Jersey, consequently we have them freshen from two to two and a half years old. In order to secure some size in the other two breeds, we do not allow them to freshen until they are two and a half or three years old, depending somewhat upon the individual.

We aim to weed out all the four-year-old heifers that do not reach the following standard:—

	Lb. Milk in One Year
Shorthorns	4,500
Jerseys	7,500
Ayrshires	8,000
Holsteins	10,000

We have not yet set any standard for fat production, but intend to discard those that do not produce milk testing at least 3.2 per cent.

As far as possible, our herds are milked about eleven months during their first lactation period and allowed to go dry at least six weeks before they freshen again. Our herds have not been established sufficiently long to show any marked improvement in the average production.

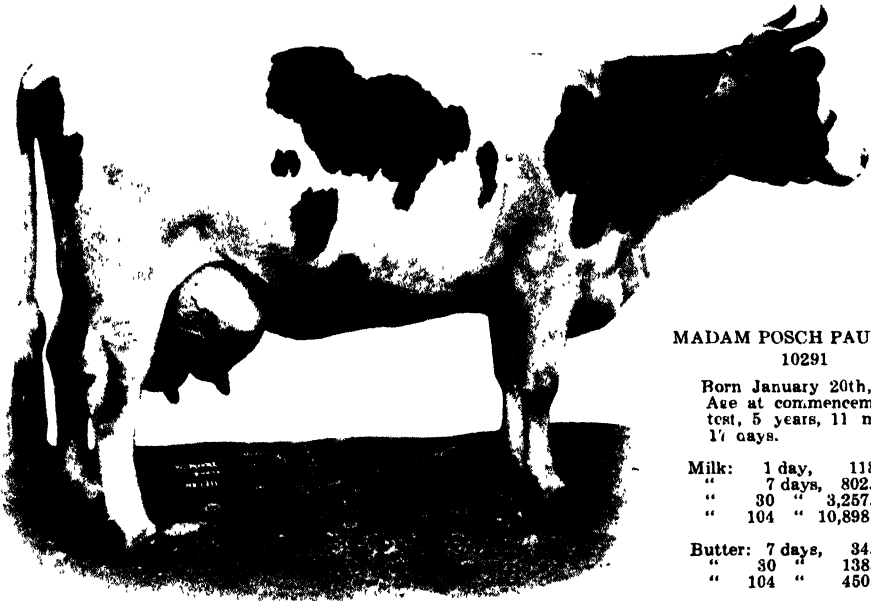
COLONY FARM, BRITISH COLUMBIA

BY C. W. HOLMES, HERDSMAN

TAKING the questions consecutively as set down, the answers, referring to our herd, are:

1. We find that heifers calving at the age of 27 months do the best.

2. The amount of milk and fat for a two-year-old heifer, to be retained in this herd is 10,000 lb. milk and 330 lb. fat. Holstein-Friesian is the only breed kept.



MADAM POSCH PAULINE
10291

Born January 20th, 1908.
Age at commencement of test, 5 years, 11 months, 17 days.

Milk:	1 day,	118.8 lb.
"	7 days,	802.9 "
"	30 "	3,257.2 "
"	104 "	10,898 "

Butter:	7 days,	34.08 lb.
"	30 "	138.06 "
"	104 "	450.93 "

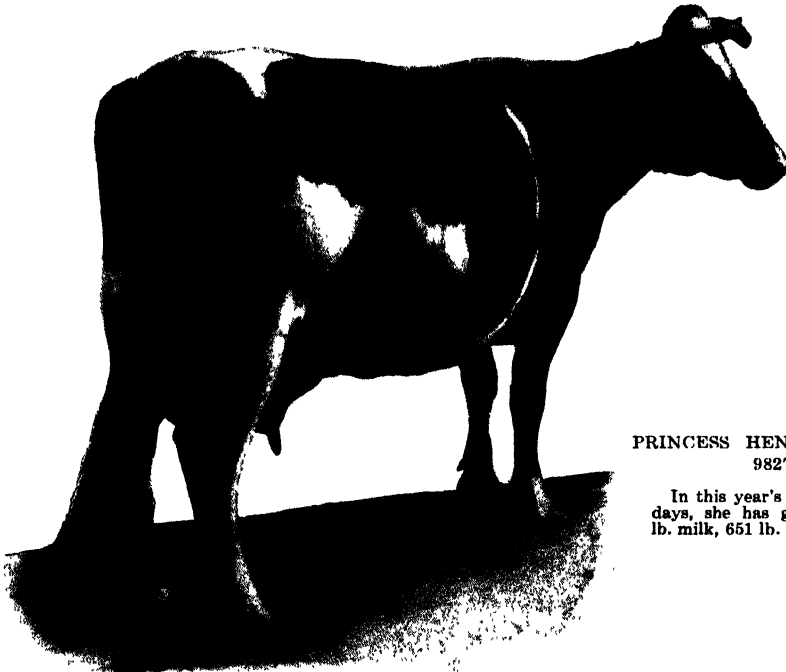
3. We like them to milk at least 12 months, then let them go dry for 10 weeks.

4. (a) This is a question we can only begin to answer as we have had two-year-olds in milk only in 1914, and so far have an average of 10,360 lb. milk and 376 lb. fat. They are going to improve on that this year.

(b) Three-year-olds tested in R.O.P. work, average 15,102 lb. milk and 488 lb. fat, which we think will be improved on by 1,000 lb. milk and 40 lb. butter fat. The improvement over

1911 and 1912 has been over 3,000 lb.

(c) Mature cows in R.O.P. work average 16,879 lb. milk, 547 lb. fat, but this does not include several cows that have given over 20,000 lb. but did not calve within the fifteen months to secure certificates. The improvement in this class over 1913 is 3,500 lb. We are aiming to have our herd average, for two-year-olds 12,000 lb. milk, 400 lb. fat. Three-year-olds, 17,000 lb. and 525 lb. Mature cows, 20,000 lb. and 650 lb.



PRINCESS HENGERVELD
9827

In this year's work in 265 days, she has given 18,610 lb. milk, 651 lb. fat.

FARM FORESTRY

It is many years since public men commenced to view with alarm the depletion of the forests and wood lots of Canada and other countries. Because of their value to agriculture and to the appearance of the country, there has been here brought together the story of what is being done by the Forestry Branch of the Department of the Interior, by the Canadian Forestry Association, and by the Forestry Branches in the provinces of Ontario and British Columbia, and the action taken and the encouragement given by the Departments of Agriculture of Prince Edward Island and Saskatchewan, respectively, to preserve and restore farm wood-lots, to provide shelter belts, and to reclaim waste land in agricultural sections by reforestation.

WORK OF THE FORESTRY BRANCH OF THE DEPARTMENT OF THE INTERIOR IN RELATION TO AGRICULTURE

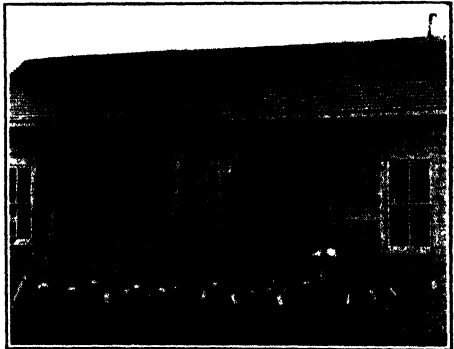
BY R. H. CAMPBELL, DIRECTOR OF FORESTRY, OTTAWA

At the time of the establishment of the Forestry Branch of the Department of the Interior, Canada, in 1899, one of the objects was the promoting of tree culture in the three Prairie Provinces and this has continued to be one of the most important parts of the work of the Branch.

It may be well, however, to point out that all the work of the Forestry Branch has a bearing upon farmers' problems. Since lumbermen and forest engineers agree that in Canada seven or eight times as much timber has been destroyed by fire as has been cut, it is evident that any successful effort to reduce the fire loss must keep down the price of lumber, one of the raw materials of the farmer.

Besides this, leaders in the agricultural industry have most cordially appreciated and supported the establishment of the great forest reserve on the eastern slope of the Rocky mountains, because, as they state, if that reservoir and regulator of the waters flowing eastward across the prairies were destroyed, a great part of the farming industry in the prairies would be destroyed with it. It is agreed that all forest reserves

are conservers of precipitation, regulators of streams, barriers against high winds and covers for insectivorous birds.



PACKING HOUSE AT DOMINION FORESTRY BRANCH NURSERY SHOWING A FEW OF THE MANY HUNDRED BUNDLES OF TREES READY FOR SHIPMENT

FORESTS RESERVED FOR FARMERS

But leaving aside this indirect assistance to the farmer, it should not be overlooked that the system of Dominion forest reserves in the Prairie Provinces and in the Railway Belt in British Columbia is maintained largely for the benefit of the farmers. The use of the word

"reserve" has given rise to a misconception which ought to be removed as soon as possible. The forest areas set apart are reserved "for", not reserved "from", the public. They are reserved from squatters and trespassers in order that the whole body of fair-minded and law-abiding settlers may have the fullest possible benefit of the timber, hay and grazing, upon them.

Nor are these rights and benefits reserved for a far-off time. The settlers are benefiting now and will benefit still more in the years to come. In the first place no land is set apart as a forest reserve if the

the forest. The Forestry Branch sees that the dead timber is first taken off by the settlers, which gives the young growth a chance, and then directs cutting operations to the mature trees so that in a few years the reserve will be in a position to supply the maximum amount of timber annually in perpetuity. In every reserve there are naturally enclosed some pastures and hay meadows, and the Forestry Branch has worked out a plan whereby the surrounding farmers are allowed to make use of these *pro rata* until the meadows are fully cut over and the ranges fully stocked.



A PRAIRIE FARMER'S SHELTER-BELT

Grown in seven seasons from seedling trees supplied by Dominion Forestry Branch. Farm of Samuel Purse, Pense, Saskatchewan

soil is good enough for farming. Squatters on lands, unfit for farming but good for forest growth, as has been proved abundantly in Eastern Canada, after having destroyed the timber to clear the ground eke out a miserable existence until they abandon the land, or are removed from it by some governmental or charitable organization. For their own good as well as for the good of the surrounding settlements on good land, squatters are kept off the reserves. Trespassers are kept off because they naturally cut and slash whatever is most convenient to them without regard to the rest of the community or to the future of

RESERVES—THE PEOPLE'S FORESTS

In the fiscal year ended March 31, 1915, there were issued 2,671 free and 1,517 paid permits to cut timber on the forest reserves. The timber cut included in round numbers 225,000 roof poles, 375,000 fence rails, 390,000 fence posts, nearly five million feet of saw-timber, and one and a quarter million lineal feet of building logs and 43,000 cords of fuel. It is impossible here to go into an explanation of how much is given the farmer free except to say that the settler gets enough building material free to make a good start on his home and that after that he is

charged a very low rate. Fuel for his own use is always free. This is distinct from any commercial timber business on any of the reserves. Although the grazing regulations were put into force only in the spring of 1914, over 27,000 head of stock were grazed that year by nearly three hundred different owners. This stock included 13,000 head of cattle, over 2,000 horses and over 12,000 sheep. In the same way over 13,000 tons of hay were cut on the reserves under permit by farmers.

It will be seen from the above that in the prairie land, where the

able him to grow crops and fruits which he cannot grow on the open prairie. That these objects are being attained and that the farmers appreciate and are taking advantage of this work is indicated by figures which are given below.

TREE PLANTING ENCOURAGED

Tree planting is encouraged in five ways: (1) by supplying seedlings, cuttings and tree seeds free, the applicant paying the express charges; (2) by supplying trees to schools to arouse the interest of the children; (3) by giving applicants free advice,



HOME-GROWN FUEL

Three and a half cords of wood cut from trees planted at Dominion Forestry Branch Nursery at Indian Head, Saskatchewan, in the spring of 1903 and cut in the autumn of 1906

vast majority of the farms can have no woodlot to begin with, the Forestry Branch has made the reserves national woodlots or people's forests. But in addition to this the Forestry Branch has ever kept in view the building up of a woodlot and shelter-belt on every prairie farm. Among the objects aimed at in this are: to make the farm homes more comfortable and attractive by providing shelter, to provide fence-posts and small building material, and in time, a considerable portion of the settler's fuel, and also to en-

both by inspectors who visit each farm before and after planting and by literature; (4) by the distribution of conifers at cost and (5) by maintaining experimental and demonstration plantations at Indian Head and Sutherland, Saskatchewan.

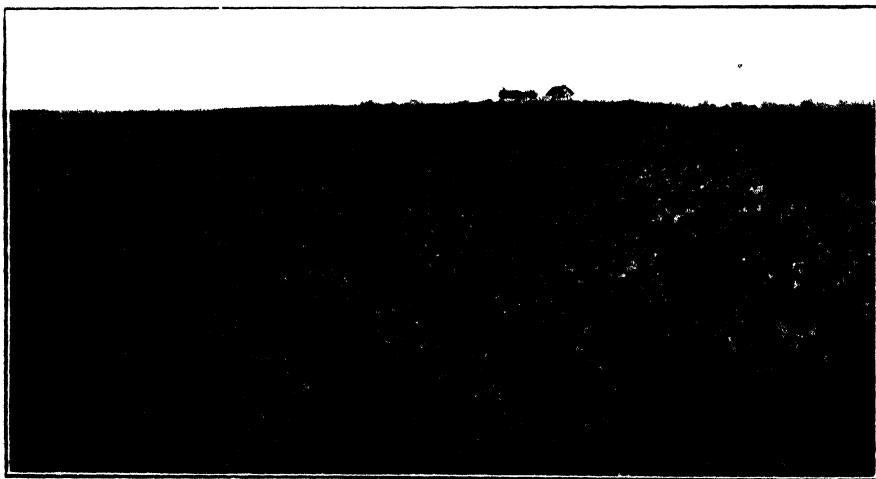
The trees most extensively sent out are Manitoba maple, (*Acer Negundo*), green ash, (*Fraxinus pennsylvanica* var. *lanceolata*), Russian Poplar, (*Populus certinensis* and *P. Petrovski*), willow (*Salix*, several varieties) and Caragana (*Caragana arborescens*).

The first trees were sent out in 1901, when a little over fifty thousand trees were distributed to forty-four applicants. In the spring of 1915 there were distributed approximately three and three-quarter millions of trees to over 3,500 applicants. The number of new applications received for trees for planting in the spring of 1916 was over 3,675. The total number of trees sent out to date, not counting the conifers sold at cost, is a little over 31,650,000. The number of farms on which plantations have been started is about 30,000.

land for planting and later how to keep the trees growing.

As to printed advice, Bulletin No. 1 of the Forestry Branch is entitled "Tree Planting on the Prairies," and of this bulletin 60,000 copies have been issued and the sixth edition is now on the press. Other bulletins are also issued on different aspects of the work.

The number of trees sent to each applicant is determined partly by the amount of land the farmer has ready and partly by the quantity of stock available in the nursery. In the early years the number sent to



GREEN ASH SEEDLINGS IN SECOND SEASON AT DOMINION FORESTRY BRANCH
NURSERY AT INDIAN HEAD, SASKATCHEWAN

In planting, the trees are usually set out four feet apart each way, thus the trees sent out represent an area of 11,625 acres or a little over 18 square miles. Wind-breaks are usually planted ten rows wide, so the trees sent out by the Forestry Branch represent a wind-break 2,397 miles long. As stated above the plantations are inspected at frequent intervals, and it has been found that about 85 per cent of the trees set out since 1901 are living.

Eight inspectors are engaged all the growing season in visiting farms, advising first how to prepare the

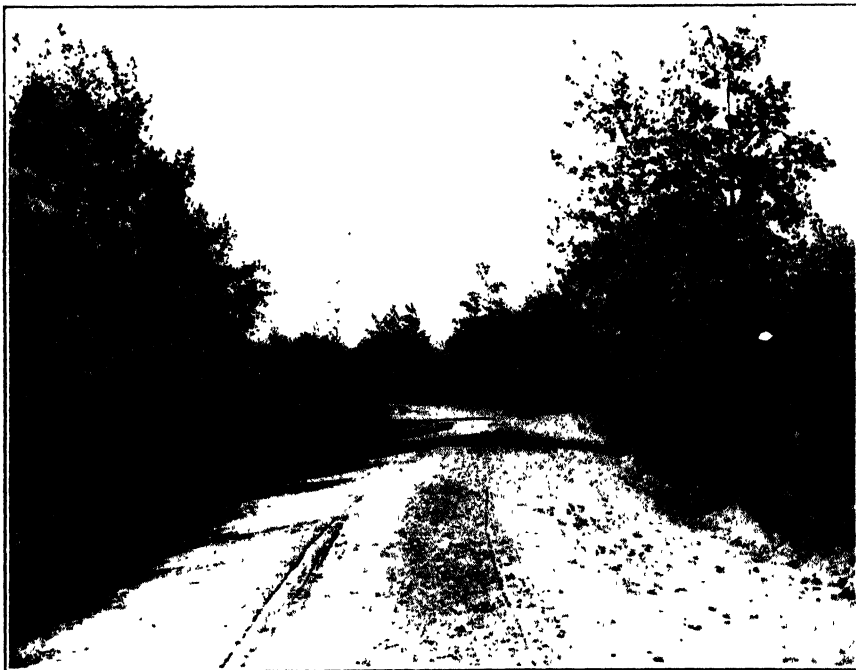
each applicant averaged about 1,500 trees, but of late years as the demands upon the nursery have increased, the number has dropped to about 900. Trees are supplied for two successive seasons, after which it is expected that the farmer will be able to extend his plantation by the use of seed or cuttings from the part already planted.

In the first years of this work the seedling trees and plantations of cutting stock were raised at the Dominion Experimental Farms at Brandon and Indian Head. The demand soon outgrew the room

which these farms could give to the work, and in 1904 a Forest Nursery Station of 480 acres was established at Indian Head, Saskatchewan. Part of this station is used for the nursery beds and cutting stock and part for a series of permanent plantations where different species of trees are tried and careful records kept to show the rapidity of growth, freedom from disease, pests, etc. When the land was acquired for this work it

Nursery continued to increase so rapidly that in 1911 a half section of land was secured at Sutherland, near Saskatoon, Saskatchewan, and next spring (1916), stock will be shipped from this station as well as from Indian Head.

The demand upon the Forestry Branch for information on tree planting in eastern Canada caused the preparation of a circular devoted to this subject (Circular No. 10



DRIVEWAY AT DOMINION FORESTRY BRANCH NURSERY AT INDIAN HEAD, SASKATCHEWAN

Seven years before this picture was taken this spot was absolutely bare prairie. These trees have been grown without artificial watering and by cultivation only.

was absolutely treeless prairie, and, in order that the conditions of growth would be such as could be provided by any prairie farmer, it has been a rigid rule that no artificial watering would be done even in the driest season. This policy has demonstrated that trees can be grown on the prairies by cultivation and without artificial watering.

The demands on the Indian Head

“Care of the Woodlot”) of which over 15,000 copies have been sent out, chiefly to Nova Scotia. An officer of the Forestry Branch experienced in handling eastern woodlots, has, upon request, visited farms in different parts, especially in the Maritime Provinces, and given advice as to their management. About 14,700,000 acres, or nearly 6 per cent of the farm lands of Eastern Canada

are occupied by woodlots. Much of this is waste land which would produce no other crop. These woodlots under proper management are capable of producing seven-tenths of a cord per year in perpetuity, a total of 10,290,000 cords, or 5,700,660,000 feet board measure, a quantity more than twenty times as great as the whole quantity of hardwood cut for saw-timber in Canada in 1913.

The benefits of prairie woodlots in the way of shelter, fuel, fence-posts and building timber were at once obvious and of recent years it has been discovered that fruits which could not be grown at all on the open prairie would mature in the shelter of a plantation. Small fruits, crab apples and plums have been thus grown for some years and in 1914 standard apples were ripened at such widely separated points as

Lethbridge, Alberta; Glen Ewen and Indian Head, Saskatchewan; and a number of places in Manitoba.

The success of the work of the Forestry Branch was one of the deciding factors in the establishment of a similar system of tree distribution by the United States Government, and commercial nurserymen agree that this work, by demonstrating what can be done and giving the people a taste for trees, helps their business. Its great endorsement, however, is to be found in the ever-increasing number of farmers who are determined thus to increase the comfort, attractiveness and production of their farms, and in the thousands of cosily situated homesteads scattered over the once treeless prairies.

NOTE—It is impossible to give further details here, but those wishing information on any points will be supplied upon application to the Director of Forestry, Ottawa.

THE CANADIAN FORESTRY ASSOCIATION

BY ROBSON BLACK, SECRETARY, OTTAWA

THE importance of the woodlot to the farm has not been recognized in Canada as in other countries. This fact is not surprising. It goes hand in hand with the widespread misconception that forests are an encumbrance on the ground, that the only *useful* or valuable trees are those lying in a lumber yard, and that no matter how many millions of trees are slaughtered annually by fire and axe, Canada has a perpetual supply which nothing can exhaust. None of these notions has anything stronger than a legend to support it. Far from being an encumbrance, forests are the only crop, and the most valuable crop that can be grown on over sixty per cent of the land of Canada. Any other than tree crops on that sixty per cent is bad science and bad business. When misled Canadian farmers have at-

tempted to defy the natural laws that set apart certain areas of every township and province for timber growing, the consequences have been disastrous and pitiable. Sections of Muskoka, Western Quebec, the innumerable sand plains (once fine timber land), with their desolate "abandoned farms", such as we see all over Eastern Canada offer such convincing evidence as to forever stop the employment of non-agricultural land for agricultural purposes.

To bring the Canadian people to appreciate that certain parts of the country should be perpetually under forest is one of the objects for which the Canadian Forestry Association came into existence fifteen years ago. It is today the national organization for the protection of Canada's forest wealth. The interest of the Association and its several thousand

members applies not only to guarding the great timber and pulpwood areas from fire and wasteful cutting, but the awakening of the Canadian farmer to the high importance of his woodlot (which has been termed "The balance wheel of the farm"), and the encouragement of the Western settler to plant up his homestead.

other causes, the fire fiend is hurrying the nation to the day of timber bankruptcy. Estimates of merchantable timber which were given to the public ten years ago have been reduced by from thirty to seventy per cent by careful analysis and exploration of forest engineers. Thirty years is placed as the limit of Ontario's standing timber at the



PART OF A PILE OF 45,000 LOGS AT MILLVILLE, NOVA SCOTIA
These and other forest products are worth \$172,000,000 a year to Canada.

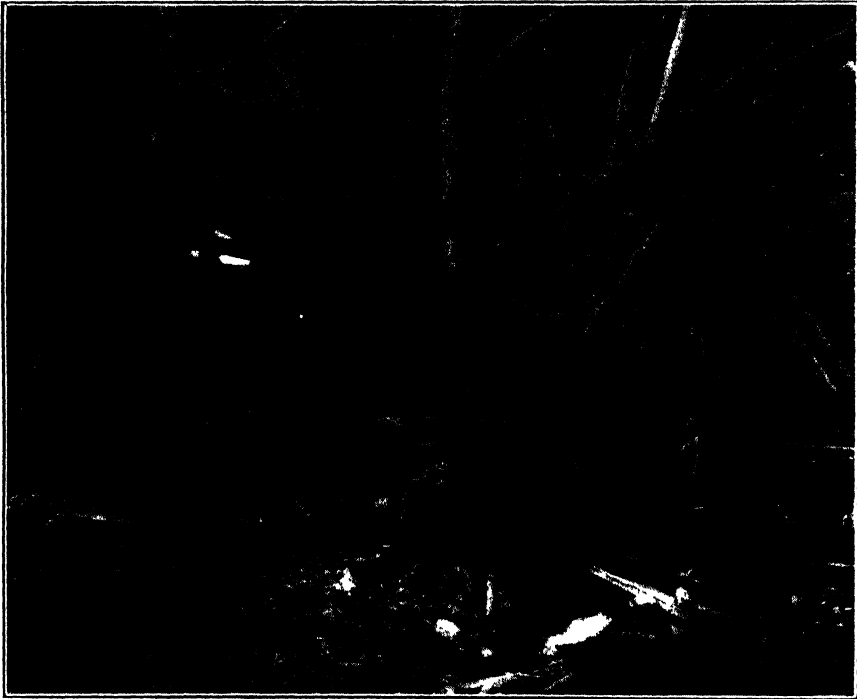
DESTRUCTION OF NATIONAL WEALTH

The forests of Canada produced over \$170,000,000 of wealth in 1913, which exceeded the value of the wheat crop by nearly \$50,000,000. It would seem, therefore, that to hold this immense source of revenue unimpaired *for all time to come* would be among the first concerns of every individual and every government. Fire alone kills off from six to eight times as many trees each year in this country as are cut by lumbermen. Independent of all

present rate of burning and cutting, and other provinces are substantially within the same category. Happily, public pressure has become such that these absurd and needless fire losses are being lessened through organization of timber areas under fire-rangings systems. Science has proved in other countries that forest fires once started can be controlled by prompt and skillful attention. But far more important is the proof that forest fires need not be *started*. Human carelessness is the tinder that sends millions of dollars'

worth of precious forest growth into the bonfire every year. While railway locomotives used to be one of the worst causes of conflagration, recent legislation has improved matters materially. River drivers campers, prospectors, construction gangs, etc. have also merited censure for setting forests ablaze with a total disregard of consequences. Settlers in timbered areas of Ontario

manner of burning, British Columbia and Quebec have materially decreased their annual bills for timber fires. Surely no loyal Canadian will uphold the right of the settler (as was actually exemplified in Quebec) to start a fire to clear up land for a small potato crop and finish the job by burning down three million dollars' worth of white pine on adjoining limits.



A FIRE-SWEPT MOUNTAIN SIDE IN BRITISH COLUMBIA

The destruction of the timber resulted in a cave-in of a mine shaft. Since Confederation, lumbermen have used up only one-eighth as much of Canadian forests as fire fiends.

have caused irretrievable damage to standing timber and it is to this source of destruction that immediate restrictive measures will doubtless be directed. In all forested provinces settlers constitute one of the most serious and yet easily controlled factors in this matter of protection. By obliging every settler to consult a fire ranger or inspector before setting out his fires and follow simple expert instructions as to the time of day and

THE EDUCATIONAL CAMPAIGN

The Canadian Forestry Association has no quarrel with any commercial interest turning the forest to use and profit. What it does urge is that the forest shall be so managed as to extend its use and profit to future generations. Certainly the forest management of a decade ago or less, if continued for another thirty years, will leave to our grandsons only the wreckage of a once mighty national asset. The

perpetuation of our present income from the forests imperatively demands the co-operation of the scientific forester and application of modern economical methods to harvesting wood crops.

In its work of arousing the public to the importance of forests as sources of great national wealth, and as the basis of our water powers and

soil fertility, the Canadian Forestry Association carries on a campaign of education through newspapers and magazines, conventions, series of lectures, distribution of literature and similar channels, and has undoubtedly developed in the Canadian people a more intelligent and determined regard for the problems of forest conservation.

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

I regret to say that as yet nothing whatever has been done in this connection by the Department of Agriculture. In 1904, a Commission was appointed to investigate forestry conditions, whose recommendations were subsequently published in the form of a report. No action was taken on their recommendations. In the year 1901 an

Act was passed to prevent the destruction of forests and other property by fire, making it unlawful to set out fire near forests or wood lots between the first day of May and the first day of December in any year, except for the purpose of clearing land, cooking, obtaining necessary warmth or for some necessary industrial purpose.

ONTARIO

BY E. J. ZAVITZ, FORESTER, DEPARTMENT OF LANDS, FORESTS AND MINES, TORONTO

THE forestry problems confronting us in older Ontario, of especial interest to the agriculturist, are the following:

The improvement and care of the woodlot.

The replanting of waste portions of the farm.

The reclamation of the larger waste areas in agricultural regions.

The farm woodlot, which constitutes the greater part of the remaining woodland in Southern Ontario, is invariably a remnant of the original forest located at the rear of the farm. The percentage of woodland is becoming very low in the more densely settled counties, as those along the St. Lawrence, Lake Ontario, and the southwestern part of the province. The older counties

average about nine per cent of woodland, but many townships are as low as five per cent. The southwestern peninsula of Ontario contains about seven per cent woodland.

It is difficult to predict just how small an amount of woodland would suffice for Southern Ontario and still maintain normal climatic and soil conditions. The percentage of woodland for older Ontario is far below that of many of the older European countries.

The following provisions have been made in Ontario to meet the need of improving the condition of the farm woodlot:

Lectures are given in farm forestry at the Ontario Agricultural College.

Bulletins are published by the



FIG. 1. SHIFTING SAND AT THE NORFOLK FOREST STATION PLANTED WITH SCOTCH AND JACK PINE IN 1910

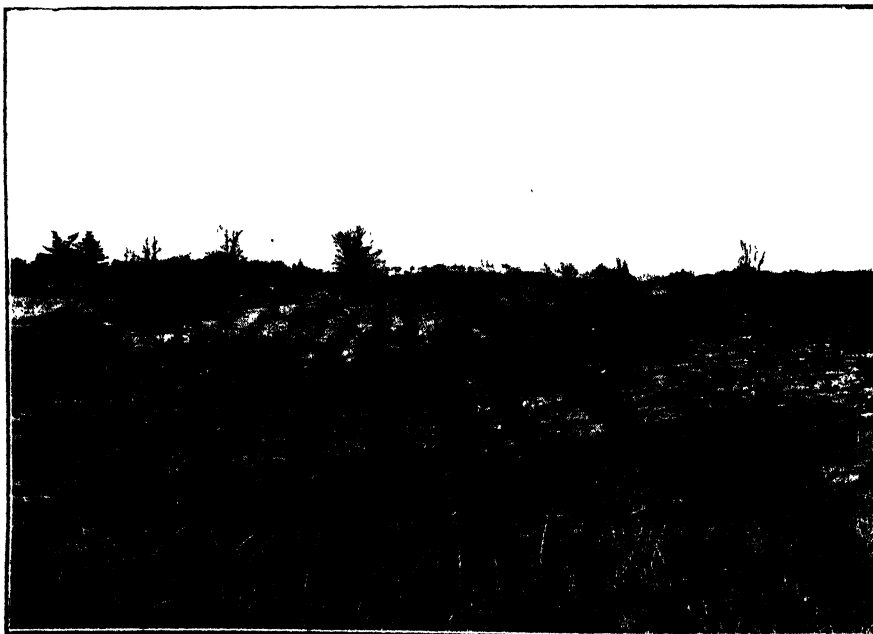


FIG. 2. SHOWING THE 1910 PLANTATION, FIG. 1--TWO YEARS LATER



FIG. 3. A SANDY RIDGE BEING PLANTED WITH SCOTCH PINE IN 1903 AT THE NORFOLK FOREST STATION

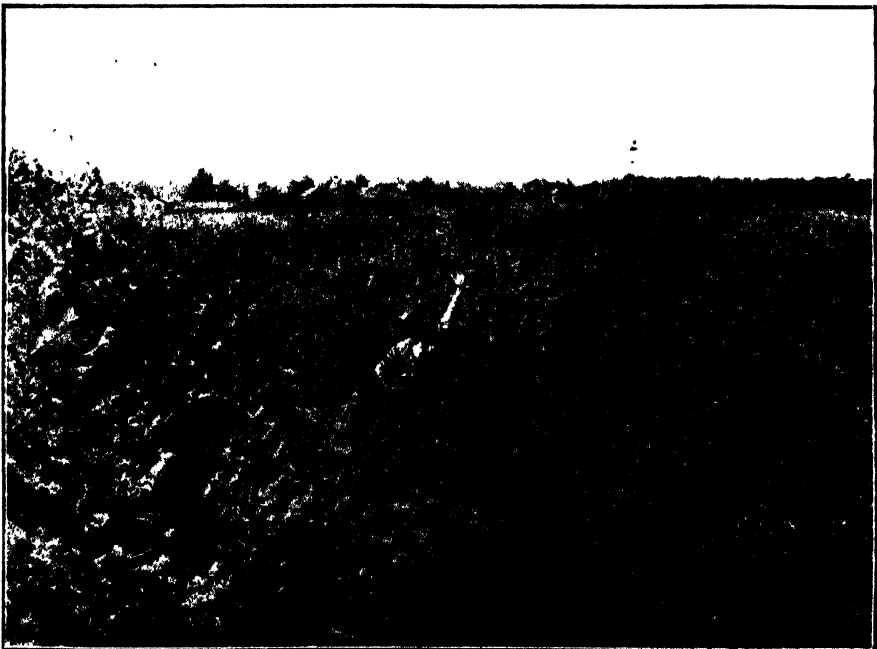


FIG. 4. SAME PLANTATION SHOWN IN FIG. 3
From photograph taken in 1918, four years after planting

Ontario Department of Agriculture on Farm Forestry. (Bulletin 209, Farm Forestry.)

Forest planting material is supplied to owners desiring to improve their woodlot conditions. (For information, inquire, Forestry Branch, Parliament Buildings, Toronto.)

An Act was passed in 1906, providing for the exemption of woodlands from taxation. (R.S.O. 1914, Chap. 195, s. 234.)



FIG. 5. SEED BEDS WITH TWO-YEAR OLD PINE SEEDLINGS AT THE NORFOLK FOREST STATION

An Act was passed in 1913 to encourage the planting and growing of roadside trees. The Act deals with property conditions of trees planted along the roadside, but the most interesting clause of the Act is that providing that municipal councils may pass a by-law in order to bonus tree planting along highways and boundary lines. (The Tree Planting Act, R.S.O. 1914, Chap. 213.)

The care and improvement of the woodlot depends upon the interest awakened in the individual landowner. A small percentage of landowners are interested in giving their woodlands care and protection. The number will gradually increase, but when one realizes that only a limited number of farmers give their annual crops reasonable care we cannot expect rapid development in the care of private woodlands where the time element is so large a factor.

In various parts of Southern

Ontario, we find unproductive areas, usually of light sand formation. These areas are described in a publication "Report on the Reforestation of Waste Lands in Southern Ontario, 1908". The reclamation and reforesting of these larger waste areas will have to be undertaken by the Province or Municipality.

EXPERIMENTAL FOREST STATION

Ontario started an experimental forest station in Norfolk County in 1909. The Norfolk forest station contains 1,800 acres, being a part of a light sandy area some 5,000 acres in extent. The soil of this area, when cleared and tilled, soon began to drift so that farming was gradually abandoned.

At the Norfolk forest station is located the provincial forest nursery, where planting material is grown for local use, and also for distribution to private landowners desiring to reforest. At this station about 200 acres have been planted with various experiments in forest planting.



FIG. 6. SCOTCH PINES IN NURSERY LINES AT THE NORFOLK FOREST STATION
These plants are now ready for planting

The Forestry Branch is now sending out about 400,000 seedling trees each year to private landowners. Under this distribution about 2,000,000 plants have been distributed. Plantations have been made in nearly every county of Ontario. The forest plantations are from one acre to several acres in extent and are usually made upon the poorer classes of soils.

SASKATCHEWAN

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE

IN so far as this province is concerned no organised or definite work to preserve or restore farm woodlots is undertaken by any department of the Provincial Government.

In so far as the provision of shelter belts is concerned, this work is carried on by the Department of the Interior at Ottawa through the Forest Nursery Stations, the principal one of which is located at Indian Head under the superintendency of Mr. Norman Ross, and a second one of which has recently been established at Sutherland, I

believe, very close to Saskatoon. From these stations many millions of seedlings and cuttings of trees suitable for shelter belt purposes, and latterly also young coniferous trees for more ornamental planting have been distributed to settlers.

In so far as the reclamation of waste land and its forestation or re-forestation is concerned, I may say that all such land in these prairie provinces is the property of the Dominion Government and is administered by that government, so that no such project could be carried on by the Provincial Governments.

BRITISH COLUMBIA

BY THE ACTING CHIEF FORESTER

BRITISH COLUMBIA is pre-eminently the timbered province of Canada, containing as it does in the neighbourhood of 120,000,000 acres of timberland, exclusive of the portion lying within the Watersheds of the McKenzie, Yukon and Skeena Rivers. The merchantable timber is estimated to be about four hundred billion feet B.M., which is more than half of the total estimated stand of timber of the whole Dominion of Canada. In addition to the merchantable stands containing this four hundred billion feet there are immense areas of young growth.

The climatic conditions of British Columbia, especially the Coastal regions, cannot be excelled for natural reproduction of timber species. This wonderful natural regeneration makes artificial reforestation, either by seeding or planting, entirely unnecessary, and the farmer in British Columbia is primarily concerned in keeping down the young forest growth. This, of course, is in direct

opposition to the conditions prevailing in the Prairie, where planting has to be resorted to by the farmer in order to get tree growth of any kind.

The Forest Branch of British Columbia was created in 1912, and has control of all forest work in the Province, including collection of revenue, measurement of timber, sale of Crown timber, fire protection of timber (which is the Province's greatest resource), securing of reproduction on absolute forest soil. In addition, the Forest Branch does a large amount of land classification, as timberland is defined by Statute as being land that carries 8,000 feet per acre west of the Cascades and 5,000 feet per acre east of the Cascades. Such land cannot be alienated in any way by the Crown until the timber has been removed. In addition considerable areas that have been examined by the Forest Branch have been absolute forest land and not suitable for agriculture, and are placed under reserve for the growing of timber.

NOTES FROM DISTRICT REPRESENTATIVES

PRINCE EDWARD ISLAND

SUPPLIED BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

QUEENS COUNTY

W. R. Shaw:—

"During the month of August some of my time was taken up with the inspection of School Gardens and Home Project work. In Charlottetown weeds were in evidence in the plots. Quite a number of the children were in the country and plots were being neglected. Again, many of the plots were not in suitable grounds, there being considerable depth of coal ashes over the soil. The beds had been made carefully and the seeds planted but few germinated and the growth was not satisfactory. In the rural districts the plots were better than I expected to find. Not only were the children interested but the parents seemed pleased with the work done, and the plots were given the necessary attention. On the whole the work has been very satisfactory, and teachers and pupils are evincing considerable interest in this department of school work.

STOCK JUDGING CLASSES

"During the summer there were five Live Stock Judging Classes held in Queens county. Agricultural picnics were held in connection with four of these, and short addresses were delivered by members of the agricultural staff and representatives of the Women's Institute branch. Besides the instruction given a general good time was enjoyed by all. The first judging-class was held at Winsloe on July 5th. Two classes of horses were brought in, draft and light, all grades with the exception of one, a mare of good form and quality. Mr. W. R. Reek, B.S.A., Director of Agricultural Instruction, had charge of the horses, being assisted by Mr. L. Tennant, B.S.A., District Representative for Kings county. In cattle there was one large class of dairy cows of fair quality. Prof. Ross, Secretary for Agriculture, had charge of this class, assisted by Mr. W. R. Shaw and Mr. Tennant.

"On July 13th a judging class was held at Kingston with no picnic in connection. This was held after six o'clock so as not to interfere with the day's work. The attendance was large, and splendid classes of dairy and beef cattle were brought out. Prof. Ross had charge of the classes in dairy cattle and W. R. Shaw of the beef classes.

"On July 16th classes were held at Grahams Road. Both horses and cows were mostly grades. The animals shown, however, were of good quality, especially some of the light horses, which attracted special attention. The class of cows was a splendid one for demonstration purposes. Mr. Reek had charge of the horses while Prof. Ross and Mr. Shaw conducted the classes in cattle.

"On July 28th a judging class and picnic was held at Argyle Shore. Cows alone were judged, Prof. Ross and Mr. Shaw having charge. The dairy class was only of fair quality. In the beef three pure-bred Shorthorns were shown, two cows and a bull. The latter has been placed here by the Dominion Live Stock Branch.

"The last of the judging classes was held at Stanchel on July 30th. The cows were mostly grades and of poor quality, with the exception of one pure-bred Shorthorn heifer and bull. This bull has also been placed here by the Live Stock Branch. The attendance at this meeting was exceptionally good and keen interest was taken in the work by the farmers who are just starting in to grade up their stock.

"All of these meetings were held under the management of Institutes or Live Stock Breeders' Associations and the farmers seem to be very enthusiastic over the work. Many questions were asked and valuable points explained in the general discussions which took place at these gatherings."

KINGS COUNTY

L. Tennant, B.S.A.:—

"Three stock judging classes were held in Kings county during the past summer. On July 6th one was held at Murray River under the management of the King George Institute. Attendance, 55. In horses we had a pure-bred Clydesdale stallion—an excellent individual of first class breeding. This animal has been placed in the district by the Dominion Live Stock Branch. There were also a number of heavy and light grade mares and geldings of fair quality, which made very useful classes for discussion. Mr. W. R. Reek, B.S.A., Director of Agricultural Instruction, had charge of the classes in horses. In dairy

cattle there was one pure-bred Ayrshire bull and a pure-bred Ayrshire cow—both of fair quality and breeding—and some good grades. Mr. L. Tennant had charge of the classes in dairy cattle.

"On July 19th a judging class was held at C. C. Dingwell's, South Lake, under the management of the East Point Farmers' Institute. Attendance, 40. Horses, dairy cattle and sheep were the classes of stock under discussion. Mr. W. J. Reid, B.S.A., was in charge of the work and he was assisted by Mr. M. H. Coughlin. The animals used in the classes were of fair quality.

"On July 23rd a judging class was held

at the Red House cheese factory, under the management of the Red House Institute. Attendance, 75. Heavy and light horses, dairy cattle and beef cattle were the classes of stock which were taken up. The animals were of very good quality but chiefly grades. The work was in charge of Mr. W. J. Reid, assisted by Mr. Coughlin.

"There were no picnics held in connection with the judging classes at any of these places. The attention of the people in attendance was concentrated wholly on the classes of live stock under discussion. A number of questions were asked and there was a good deal of interest in the various classes that were taken up."

ONTARIO

SUPPLIED BY C. F. PAILEY, B.S.A., ASSISTANT DEPUTY MINISTER

PETERBOROUGH COUNTY

F. C. McRae, B.S.A.:

"I notice from one of the extracts from Mr. Whale's reports that he emphasizes the value of good seed for distribution to the children. Mr. Whale certainly struck the nail on the head when he mentioned that fact. Good seed distributed to the children has probably done more for us in this county than any other work we have undertaken. To give an instance, practically every farmer is greatly delighted with the O.A.C. No. 72 oats that were distributed this year. Our corn also is giving excellent results as also are our potatoes for the simple reason that the seed of these different crops was just as good as could be procured, and we took special pains in selecting it when sending it out. The result is that every one is more than satisfied.

"The three acres which we are spraying for blight are looking exceedingly well considering the fact that it has been such wet weather during the past two weeks. We find throughout the county, especially on clay land, that potatoes are rotting badly, and our experiments with the Bordeaux mixture should, therefore, show good results in the fall when the potatoes are dug."

CARLETON COUNTY

W. D. Jackson, B.S.A.:—

"Many interesting things develop as the School Fair becomes established or extended into new territory. We find instances where the chickens hatched from eggs which have been supplied to the pupils are forming the foundation of the home flock,

and remunerative results have already been obtained. In one case last year a boy had 11 chickens from his dozen eggs and in the fall disposed of 6 cockerels at not less than \$1.50 per bird. There are also several cases where the potatoes have been propagated from year to year and now form the main potato crop on the farm. The same applies to grain, and I have one instance in mind where the father has 5 acres of O.A.C. 21 barley which originated from the sample given to the son in 1913."

DUNDAS COUNTY

E. P. Bradt, B.S.A.:—

"I have been shown some excellent fields of grain which have had as a source of seed the small quantities given to the children two or three years ago. The same applies to potatoes. The distribution of the O.A.C. 21 barley throughout this county by means of the School Fair plots has been very striking. Before the seed was distributed through the schools a large majority of the farmers in this district were sowing the two row type of barley. It is now the exception rather than the rule to find this two-rowed barley being grown. There is no question but that the home plots of the Rural School children are an excellent medium for introducing good seed. The value of the School Fairs to the province in this regard alone can hardly be estimated."

PRINCE EDWARD COUNTY

A. P. MacVannel, B.S.A.:—

"Throughout the season when we were judging the plots it has been very interest-

ing to note the number of cases where farmers have carefully saved the seed which the pupils had obtained from the seed distributed in 1914, and in other townships from 1913. I came across one special case at South Bay. John Rose was one of the pupils who in 1914 obtained one pound of O.A.C. No. 72 oats and he won first prize for best kept plot, first prize for sheaf exhibit at the Fair and first prize for grain exhibit at the Fair, and had a yield of 18 pounds of hand picked seed from the plot. When I visited his place this week his father went with the boy and myself to see his this year's plots which were exceptionally good. He also had a small field which he had seeded with last year's seed. I have another report from the boy's father and he tells me that they have threshed the grain and will have over 10 bushels of excellent seed.

"Another case with reference to the chickens was brought to our notice in the township of Hillier. In 1914 Miss Flora Bailey had five pullets and one cockerel, and from these alone she and her parents have raised over 150 chickens this season. These are merely two examples from different parts of the county and represent possibly better than the average.

"Recently we inspected an alfalfa experiment which we sowed on the farm of R. W. Ireland, Wellington, in July, 1914. In a previous report I mentioned that the outlook for seed was especially good—that was about three and a half weeks ago when our former visit was made. On our recent visit I was very much disappointed to find that the seed balls had been very largely stripped from the plant. On examination we found that we could attribute the cause to none other than the grasshoppers. We took representative samples from each plot, and the comparison is fairly good. It is quite apparent that the thin seeding on plots 5 and 6 gave more vigorous growth of stalk, and the prospects for seed were greater. As the seed is all spoiled for this year, practically all that can be done is to cut it for hay and continue the experiment for another year."

NORTHUMBERLAND COUNTY

R. S. Beckett, B.S.A.:—

"Another instance: one of the boys who had secured two pullets and a cockerel from the eggs supplied last year has already hatched 75 chickens from these and has another setting coming on. The introduction of so many chickens from the bred-to-lay strain cannot help but have a beneficial effect on the poultry farms in the district.

"On the whole the children have evinced more interest this year than last, more care being taken to follow the directions which

were given them with the materials and it is pleasing to note that the parents are also becoming interested, as was evinced by one statement made at a place that they had never had a garden before, but in connection with the School Fair work the material was distributed and the interest manifested by the children led them to put in a garden for their own use as well. We have also noted quite a desire on the part of the parents to secure the seed from the plots to use as a basis for securing superior seed for their crops.

"The Menie District Ayrshire Breeders' Club held their annual summer meeting at Mr. Hume's farm, Menie, on August 25th. Fifty or sixty farmers were present and Mr. Publow, Dairy Inspector, gave a very interesting address on dairying, the present situation and future prospects. Mr. Drummond, Ottawa, spoke on the history of the Ayrshire breed in Canada, and in the afternoon conducted a short course in stock judging, being fortunate in having the exhibition stock of Mr. Hume and Mr. Stewart to demonstrate upon."

KENT COUNTY

J. T. Johnston:—

"Kindly send me a supply of leg bands, as my chickens have outgrown the others. The chickens are very large and healthy and are much different from ones my mother raises. I am very much interested in the chickens and would be glad to have any news concerning them. Your interested pupil, NELLIE BATEMAN."

DURHAM COUNTY

R. S. Duncan, B.S.A.:—

"The following is the answer from the secretary of the trustees of one of the schools to the request of the secretary of the Clarke Rural School Fair Association for a grant of \$5 from their School Section:—

"Dear Colin:—Yours to hand re cheque for \$5, Clarke Rural School Fair Association. Might say that I was more than pleased to make out same for such valuable work. I am sure that if anything needs encouragement it is the agricultural system to keep our boys on the farm and give them a start that they perhaps may follow to success. So many have failed and have gone to the town and city only to make things worse. However, the time is near at hand when nearly all classes and creeds will come back to the land. Now, Colin, by way of encouragement, I wish the officers and directors a huge success in their new undertaking, and that it may grow with

the boys and girls so they can in after years look back with pride to their early start in life. Yours very truly, Wm. A. Cornish, Sec.-Treas., S. S. No. 15, Clarke."

GREY COUNTY

H. C. Duff, B.S.A.:—

"In our use of the plot score card this year we found it advisable not to give the children a copy of the score but we do find it to be an excellent idea to give each contestant a blank score card so they would know the points considered by the judge. With these changes we found the score card as suggested at the convention by Mr. MacKay to be decidedly superior to our system of judging in the past years.

"On Saturday we called on Herbert Wyllie of Derby and weighed three hogs that he was feeding for the Hog Feeding competition. Herbert is quite a young feeder with very little experience but he managed to develop hogs that averaged 170½ lb. at five months of age. His most apparent mistake in feeding was rushing them along a little too fast, with the result that he had very fat hogs that would not stand much more feeding."

WATERLOO COUNTY

J. S. Knapp, B.S.A.:—

"While in different districts attending School Fair meetings we took the opportunity of visiting our different corn experiments and of distributing signs with the names of the different varieties on them. These cost us about five cents apiece, and I think should make the experiment much more instructive and interesting to any person walking through the field."

RAINY RIVER DISTRICT

H. M. McElroy, B.S.A.:—

"On Wednesday afternoon we went to the first annual farmers' picnic. The farmers of the district have formed a picnic association, which is to hold a picnic each year at a different place in the district. This year it was held at Barwick. It was a decided success and the 1,500 people who attended are from henceforth boosters of the association. Speeches from prominent men of the district, football and baseball games between the different teams along both sides of the river, sports of all kinds made up the afternoon programme. Nor were the children forgotten—swings and games were arranged for them, thus giving them the time of their lives. Early in the evening there was an Indian Pow-

Wow which was very amusing, being given by the natives of the Manitou Reserve. The object of this association is mainly to have a social gathering once a year, and topics of interest to all discussed, getting the people from different sections acquainted with each other.

"Recently at the monthly meeting of the Devlin Branch of the Rainy River Potato Growers' Co-operative Association we took up the question of building a cheese factory at Devlin, with the result that a committee was appointed to investigate, and I think the result will be a cheese factory for the spring of 1916.

"The Emo Branch of the Association recently held its annual meeting in the office here, and, although the members were in the midst of haying, we had an attendance of 38. After the election of officers for the ensuing year, the question of building a Midget Flour and Grist Mill at Emo was taken up, the mill to be financed by the farmers themselves with a salaried miller to run it. This is an industry that would be of great benefit to the farmers here, and I think it could be operated so as to pay its own way. This is a very good year to start, as there is a very large acreage of wheat in the district. The Association have advertised for a miller, and if they can get a reliable man on suitable terms they intend to erect and equip a mill."

WELLAND COUNTY

R. Austin, B.S.A.:—

"More than ever this year enquiries are being made as to proper method of treating seed grain to prevent smut. In view of the importance of seed treating, we are bringing the matter prominently before the farmers through the columns of our local papers. I was quite interested in a seed treating machine manufactured at Stratford, which appears to do the work quite thoroughly, and will treat all the seed a farmer would sow in a very few minutes. It appears to me that it would be a splendid machine for Farmers' Clubs or such organizations to purchase co-operatively.

"We spent the first part of this week rounding up the members of our three classes in agriculture to get them together for our proposed trip to Larkin's Farms at Queenston on the 2nd instant. It was our intention to take them out there and give them some classes in judging as a preparation for judging classes at the Welland Fall Fair, from which we want to pick the team to send to the Guelph Winter Fair. The Larkin's Farms are admirably suited for this purpose. They have herds of Jerseys, Angus and Holsteins, also Clyde and Hackney horses and Yorkshire swine. About twenty-five members of the Junior

Farmers' Improvement Association went out with us in autos and we spent a fine afternoon on the three large farms, took up the main points in judging heavy horses, and compared two pairs of Clydesdale stallions. Then we had a class of mature Jerseys and looked over some of the Aberdeen Angus. A number of the boys showed indications of becoming excellent judges of live stock, while they all appeared interested and eager to do their best."

SIMCOE COUNTY

J. Laughland, B.S.A.:—

"As the School Fair dates draw nearer, children are becoming more and more interested. On my visits to the different districts this week I found many of the boys and girls ready to ask questions regarding the preparation of exhibits for the Fair. I found the older people in many cases had been saving up questions to ask when I came around to see the children's plots.

"One man made a trip to Collingwood, a distance of 20 miles, last spring to get information on growing alfalfa. He followed my instructions and has one of the best catches I ever saw. It had so much top that he did not know whether to cut it this fall or not, and when I went around to see the children's plots he told me he was going to take the train to Collingwood the next day to ask about cutting the alfalfa.

"A pickle factory has been established at Stayner during the past summer and quite a number of farmers have undertaken to grow cucumbers and cauliflowers. Many of them lacked experience in handling these crops and I have given them what encouragement I could. This week I spent some time at the factory and gave the manager some information that he required regarding the diseases of the crops being grown for the factory."

SIMCOE COUNTY

J. M. Varey, Outside Assistant at Barrie:—

"I was kept talking yesterday so long at nearly every place I called that I did not get in until almost dark. I found all the farmers at home and as they could not work at harvest, they nearly all came out with me to see the plots. The soil is fairly light and gravelly in the Moonstone section and consequently, in a dry season they suffer greatly from lack of pasture and winter feed for their stock. I advised them to grow corn and put up silos. There are three new silos going up this year in that

locality and they are the first to be built. When I called on Mr. Smith he said that he had been hoping we would call on a day when he was home because he wanted some advice as to the best method of treating some of his soil. It is very light and about the only grain crop he can grow is rye. He can grow fairly good potatoes and corn. I advised him to make potatoes, corn and rye his main crops. He is secretary for the school and one of the trustees. When I was leaving he said that he thought the School Fair was going to be a good thing and he would get after the other trustees for a grant of five dollars."

PEEL COUNTY

J. A. Carroll, B.S.A.:—

"It is quite gratifying to listen to the expressions of opinion by the parents. One farmer said that he thought that the strain from which eggs were distributed last year was the best that he had come across, as the pullets raised in competition had laid well all winter, and right on through the spring and summer, two-thirds of them not offering to cluck at all. Another woman said, 'I think this work is just splendid, Mr. Carroll. When my boy moved out here from the city two years ago he didn't know corn from potatoes, now he not only knows the sorts of farm crops, but also the difference in varieties, as well as weeds that are troublesome. Last year he received eggs, and had splendid success with them, so much so that he won first prize for the best flock at the School Fair. That settled it - he wanted full charge of the poultry right away, and since last fall no one else has had anything to do with the chickens. He has been getting the eggs, too.'

"Still another farmer when looking at his son's grain mixture plot said, 'There is a fine object lesson now - look at the way that oats and barley have ripened uniformly. I did not know that there was a variety of oats that ripened as early. It looks as though there would be a good yield, too. I think that mixture should be used on our farms.'

"The home grown root seed which quite a number of pupils are growing is attracting a good deal of attention."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"Recently I made the final inspection of the back yard gardens at Woodstock and found some splendid gardens. It was a surprise to me to see how much could be raised on a small plot of ground when

properly worked. Places which were weeds last year, so I am told, are places of profit and beauty this year. Most of the contestants had flowers along with their vegetables, which added to the appearance. There was one garden 50 x 100 where over \$100 worth of vegetables were produced. Other gardens produced as much in proportion to their size. In some cases we found three crops of lettuce had been grown, two crops of radishes and two crops of beets. The contestants seemed well pleased with the effort they had made and I was pleased to have the benefit of doing the judging."

VICTORIA COUNTY

A. A. Knight, B.S.A.:—

"I note from the extracts from the District Representatives' reports that there is a marked unity in opinion regarding the value of first-class seed for distribution to the school children. I want to add my own opinion on that point. In nearly every case the O.A.C. No. 72 oats has been superior to the varieties grown by the parents. As a result of this distribution quite a number of farmers have considerable areas sown from the product of the seed distributed last year. The distribution of Barred Plymouth Rock eggs is also working out in the same way, and this will mean the elimination of a great many mongrel flocks of chickens. Besides this, most of the boys and girls who received eggs are selling their cockerels to their neighbours as breeding stock.

"Mr. Linton's crop of Sweet Clover was certainly interesting and there seems to be no doubt that there is a place on some farms at least for the growth of this crop. Mr. Linton's talk, however, was more along the line of what he had made out of the crop than of its value as a forage plant. Other farmers in this county who have grown the crop claim that they have no difficulty in getting the stock to eat it, and chemical analysis of the plant would go to show that it is very nearly equal to alfalfa."

BRUCE COUNTY

N. C. MacKay, B.S.A.:—

"On Monday we cut our alfalfa plots for the second time and the following are the weights of green material:—

	(Yield per Acre)	
	Plot 1	Plot 2
Canadian Variegated	1.48 tons	5.06 tons
" inoculated	1.28 "	5.36 "
Niagara	1.36 "	5.16 "
" inoculated	1.28 "	5.06 "
Northern Grown	1.20 "	4.72 "
" inoculated	1.12 "	4.48 "

"The Canadian Variegated and the home grown seed proved much superior in every case to the Northern."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"In connection with the Horticultural Society at Weston a School Children's Department has been started. At their annual show held on September 2nd they had about 180 entries in the children's class. These were all vegetables and certainly were quite an important part of the Fair. I judged this particular part and believe it is something to be encouraged in our other horticultural societies.

"We have had a large number of enquiries regarding the treatment for smut in wheat. On the average we had 10 enquiries a day during the past week. We also wrote a short account of the treatment to some of the papers in the county."

LANARK COUNTY

P. S. D. Harding, B.S.A.:—

"I received a great deal of encouragement from the visit, as one of the councillors talked very highly of the School Fair proposition, stating that the benefits that will be derived are not as apparent at the present time as they will be a few years hence. He gave as an instance that his own children had never handled a hoe or pulled a weed before the School Fairs were held, but since taking hold of School Fair work he finds it hard to keep them away from their plots."

THUNDER BAY DISTRICT

G. W. Collins, B.S.A.:—

"I have spent considerable time inspecting school gardens in the city of Fort William at the request of the Board of Education. Some two hundred gardens were visited altogether. Notwithstanding the fact that the prizes awarded are much larger than those awarded by us for Rural School Fair work, the first prize being five dollars, the work done by the children, except in isolated cases, cannot be compared with that done by the children in the rural schools. However, the Board of Education intends continuing the work next year and are hoping for better results."

BRANT COUNTY

R. Schuyler, B.S.A.:—

"The smut has been quite prevalent in the wheat this year and very much so in the oats, consequently we have received a great many inquiries from the farmers as to how to treat their grain. Letters outlining the treatment for smut were sent to the owner of the elevator in Paris and these were placed by him in conspicuous places where the farmers could see them when unloading their grain. Letters outlining the treatment of same have also been sent to the druggists of Brantford and Paris, as we find some of them are unfamiliar as to how the formalin is used. I notice from the other Representatives' reports that they

mention finding fields of grain which are the produce of last year's School Fair grains. This seems evident all over as we have found the same thing to a marked degree. A great many of the parents have nice pieces of oats and Empire State potatoes, seed for which was got from the children's plot last year. The oats in nearly every case have been saved. We feel that the School Fair work will go a long way to unify the variety of grain grown in any one district. In one particular instance one of the lady teachers, whose father is a farmer near the school in which she taught last year, has about one-half acre of Empire State potatoes which is the product of a plot, the seed for which last year was not taken by one of her scholars."

PRINCE EDWARD ISLAND

A BUSY DAY AT THE EXPERIMENTAL FARM

SATURDAY, September 11th, was a busy day at the Experimental Farm at Charlottetown. Arrangements had been made with the Prince Edward Island railway to carry an excursion of 200 boys and girls to a picnic at the farm. When the train arrived instead of the number promised it was found the party totalled 435. Tables that were used for the big Farmers' Institute picnic were requisitioned and the lads and lasses were all taken care of. They were gathered up at Georgetown, Montague, Cardigan and other stations on the Georgetown branch line.

After Superintendent Clark, who met them at the farm, had warned the children against touching anything, as everything had to be weighed and reported upon, they were conducted through the barns to see the horses and cattle and the colts and calves. They were next allowed to wander through the fields of wheat, barley and oats, and were addressed on the nature of clover. They saw fields that had been cut for hay in July, that were completely covered with a second growth of clover from a foot to eighteen inches

high, and which were nearly ready to be cut again.

On one second year meadow two tons and eighteen hundred pounds of cured hay had been saved from one acre. The party were the first to hear how much Banner Oats had been threshed from the acre plot of Elite Stock seed grown on Rotation "A", Plot 4. The judges of the standing fields competition, members of the C.S.G.A., and many others, have been guessing that the amount of oats would be anywhere from 65 bushels to 90 bushels on the acre. When it had been threshed the yield was 82 bushels of clean grain and 3,887 pounds of straw. After a turn along the railway among the trees and shrubs that have been planted there and many questions had been answered, the children gathered at the table in the grove and feasting proceeded.

After lunch visits were paid to the apiary and the poultry home. At the latter Mr. T. A. Benson spoke briefly on the value of co-operation, pointing out how much better it would be for all the community to work together. He advised his hearers to seek instruction from their

teachers on this point. Mr. Kerr, who is taking up Mr. Benson's work, told of the value of poultry and the attention that was needed. Mr. Haszard, the poultry man at the farm, spoke of his work and explained how the hens were trapped to find out which laid the eggs and which did not. He said he was looking for utility rather than for exhibition birds.

The Superintendent next led

the way through the flower gardens, answering many questions while doing so about the cultivation of flowers, vegetables and grasses. After rounds of cheers for the officials, the boys and girls walked in procession to Queen Square Gardens and thence to the Prince of Wales' College, where, after brief proceedings, they were dismissed to follow their own sweet wills for a time, prior to boarding the train for home.

NOVA SCOTIA

NOTES

The College of Agriculture, Truro, N.S., has established a News and Publicity Bureau. Its objects are to send out to farmers agricultural news and technical articles of interest to them, and to furnish the press with short articles referring to farming, horticulture, poultry-breeding, and dairying. The Bureau has been organized by Dr. J. D. Logan, a Canadian newspaper man and magazine writer.

PROGRESS OF CREAMERY WORK

The output of the Nova Scotia creameries in 1915, to date, shows an increase of about 36 per cent over that of last year. In 1914, the total product was 913,273 pounds of butter; for the current year the total product is estimated at 1,250,000 pounds. Several of the older creameries are showing decided increases, as, for example, the Bridgewater creamery, with an output of 125,000 pounds for 1915 as against 37,000 pounds for 1914; and the Stellarton creamery, with an output of 125,000 pounds for 1915 as against 38,000 pounds for 1914. The re-opened creamery at Salma, Hants county, is manufacturing about 6,000 pounds of butter per month; and the creamery at Milburn, Antigonish county, about

11,000 pounds per month. A new creamery will be ready for business in 1916.

SAN JOSÉ SCALE

Only 6 cases of the dreaded San José Scale in Nova Scotia orchards have been located this year by the provincial inspectors, according to Prof. W. H. Brittain of the College of Agriculture and Provincial Entomologist. It is a noticeable fact that the six cases were found on stock imported previous to the inauguration of the government inspection over nursery importations in 1912. Not a single case of the San José Scale has been found on stock imported subsequent to that date. The comparative figures are very striking. In 1912 there were discovered 750 cases; in 1913, 64 cases; in 1914, only 4 cases, and in 1915, so far, only 6 cases, and all on stock imported prior to 1912.

POTATO INSPECTION

Inspection of the Truro and Cornwallis districts Garnet Chili potato fields was made recently by Mr. E. J. Wortley, Director of Agriculture for Bermuda, Prof. W. H. Brittain representing the Provincial Government, and Messrs. S. J. Moore,

Dominion Seed Inspector, and Paul A. Murphy, Dominion Plant Pathologist, representing the Federal Government. According to Mr. Wortley, the inspection revealed the fact that the Nova Scotia potato growers have learned a lesson from past experiences, and that by the use of rigidly selected seed and regular spraying they can save their potato crops from being condemned.

NEW SCIENCE HALL

"A fine building for a great purpose"—is the way in which the new Science Hall, of the College of Agriculture, was signalized by Mr. David Fairchild, of Washington, D.C.,

Agricultural Explorer in charge of Foreign Plant Introduction for the United States Department of Agriculture. He spent a day investigating the curriculum and resources of the College, and stated that, following the close of the current war, science, including agricultural science, would be paramount in education. "In Nova Scotia", he said, "you have a small college with short term courses, beginning in a month when farmer's work is done—and this, I believe, is the right ideal". The new Science Hall, which is being built of brick and free-stone and finished inside with oak, at a cost of \$100,000, will be ready for the opening in November.

NEW BRUNSWICK

AGRICULTURAL LEGISLATION

AT the last session of the New Brunswick legislature only three acts relating to agriculture were passed. The first, entitled "An Act for the Suppression of Infectious and Contagious Diseases among Bees, and for the Protection of Bees," provides for the appointment of Inspectors of Apiaries, defines their duties, and provides pains and penalties for persons keeping bees affected with American or European Foul Brood or any other disease. Apiaries must be inspected twice during the summer season. The spraying of trees in full bloom with a mixture containing arsenic or any poison hurtful to bees is prohibited. A fine not exceeding ten dollars is to be inflicted for the first offence under the Act, of not more than twenty-five dollars for the second and of not more than fifty dollars for the third.

The second measure passed is entitled "An Act to provide for assistance to Wheat Mills". It authorizes the granting of assistance by way of bonus to persons or com-

panies erecting mills for the grinding of wheat by the Hungarian, or other roller process, in localities where no such mills are at present established, or for the conversion of any existing mills into mills equipped with such roller process. The style of mill is to be approved, and the amount of bonus to be granted is to be decided by the Lieutenant-Governor-in-Council. The amount to be expended in this way is not to exceed \$5,000 per annum.

The third measure is an Act to Amend "The Agricultural Act", Consolidated Statutes, 1903. It authorizes any agricultural society incorporated under the Agricultural Act to borrow money on its promissory note signed by the president and secretary when sanctioned by resolution of the directors.

APPROPRIATIONS FOR AGRICULTURE

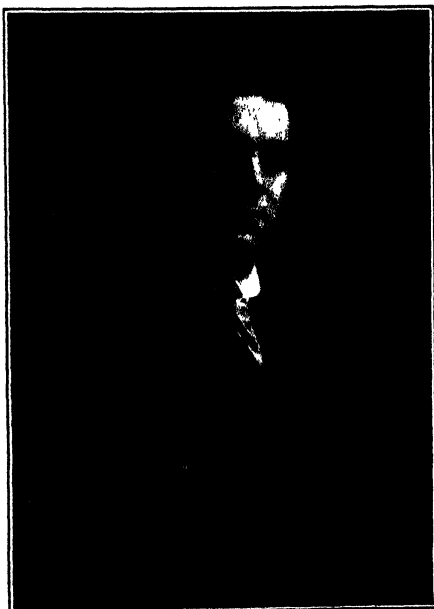
The appropriations for the year 1915-16 authorized by law or voted by the legislature are as follows:—

Grants to Societies	\$17,000	Bonus to Mud Dredges for Fertilizer	1,000
Department of Agriculture:—		Farm Settlement Board	1,800
Minister's salary	2,100	Encouragement of Poultry Raising	2,000
Secretary's salary	1,800	Standing Crop Competition and Seed Fairs	1,500
Clerks' (2) salaries	1,750	Miscellaneous. Including insurance exhibition buildings	1,500
Stenographer's salary	600	Exhibitions	10,000
Clerk Statistics, salary	200	Brown Tail Moth and other insect-extermination of	3,650
Travelling expenses	1,500	Bonus to clover hullers	600
Contingencies	1,500	Advertising Natural Products	500
Miscellaneous Grants:—		Lime-Rock crusher and power	2,000
Butter and Cheese Factories	1,000	Total	\$60,800
Dairy School	1,000		
Maritime Stock Breeders' Association	800		
Encouragement of Horticulture	2,000		
Encouragement of Stock Raising and Encouragement of Dairying	5,000		

QUEBEC

THE NEW DEPUTY MINISTER OF AGRICULTURE

MR. J. Antonio Grenier, B.S.A., LL.D. (Laval), Secretary of the Quebec Department of Agriculture and acting Deputy Minister since the death of Mr. G. A. Gigault, has been officially appointed Deputy Minister by the Quebec Government.



J. ANTONIO GRENIER, B.S.A., LL.D.
Deputy Minister of Agriculture for Quebec

Although this news was not unexpected in official circles, and particularly at the Department of Agriculture, it has nevertheless been received with a great deal of satisfaction. The unanimous opinion is that Mr. Grenier is well qualified for the important work that has just been entrusted to him by the Provincial Government, and that he will be the worthy successor of Mr. Gigault.

Mr. Grenier was born on October 1st, 1886, at Plessisville. He is the son of Mr. L. H. Grenier, mayor of Plessisville and is 28 years old. He studied at the Quebec Seminary, at the Arts Faculty, took his law course at the Quebec Laval University and became a lawyer in 1911. He was secretary of the Department of Agriculture from 1912 and was appointed acting Deputy Minister when the late Mr. Gigault died. Before entering the civil service of the Provincial Government, Mr. Grenier was a partner of the legal firm of Plamondon, Grenier and Bédard.

Mr. Grenier will be a valuable assistant to the Hon. J. E. Caron, Minister of Agriculture, and will give him splendid help in his continuous endeavour to promote agricultural interests in the province of Quebec.

EXPERIMENTS WITH CHEMICAL FERTILIZERS

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE

BY REV. NOEL PELLETIER, DIRECTOR

NO experiments with chemical fertilizers have been conducted by the School of Ste. Anne de la Pocatière during the year. Seven tons of Thomas phosphate and superphosphate were used, however, on field crops, as follows: on stubble sown with oats and clover seed; on prairie sown for the first time in preparation for a clover crop; on land sown with corn and kohl rabi. Nitrate of soda was also used: one bag for the demonstration orchard and another bag for the vegetable garden.

The following is a summary of the results of one of the latest experiments with chemical fertilizers conducted at Ste. Anne:

FIRST EXPERIMENT

Growing whea with muriate of potash, phosphoric acid, nitrate of soda and wood ashes:

The land chosen for this experiment was a heavy loam which had yielded a crop of oats the previous year sown on pasture. The plots measured one-fourth of an arpent each. They were treated as follows:

Plot No. 1—(Check plot) no fertilizer; the object of this test was to ascertain what this land could yield without fertilizers.

Plot No. 2—125 lb. Capelton superphosphate.

Plot No. 3—125 lb. Thomas phosphate. This was to find out if Thomas phosphate is better for this soil than acid phosphate.

Plot No. 4—300 lb. wood ashes, spread the preceding summer and incorporated by discing.

Plot No. 5—30 lb. muriate of potash, 125 lb. superphosphate and 30 lb. nitrate of soda.

Plot No. 6—300 lb. wood ashes, 125 lb. superphosphate and 30 lb. nitrate of soda. In this experiment wood ashes have been substituted for the muriate of potash, so as to see if there is a noticeable difference in favour of the one or the other.

The six plots were sown the same day, and received the same cultivation and the same quantity of seed: 25 lb. each. The crop from each plot was brought in the same day, threshed separately and carefully weighed. The following results were obtained:

Plot No.	Straw and chaff,	Lb. grain,	Lb.
1.	545	220	
2.	570	285	
3.	558	293	
4.	582	278	
5.	774	337	
6.	768	341	

SECOND EXPERIMENT

Growing oats with phosphoric acid, wood ashes, muriate of potash and nitrate of soda:

These experiments were conducted on a good sandy loam which had given a good crop of grain the preceding year. The plots, which were of the same size as in the first experiment, were treated as follows:

Plot No. 1—No fertilizers; check.

" 2—100 lb. superphosphate.

" 3—100 lb. Thomas phosphate.

" 4—200 lb. wood ashes spread the preceding autumn and incorporated to the soil by discing.

" 5—20 lb. muriate of potash, 100 lb. superphosphate and 20 lb. nitrate of soda.

" 6—200 lb. wood ashes, 100 lb. superphosphate and 20 lb. nitrate of soda.

The six plots were sown the same day, received the same cultivation and the same quantity of seed: 25 lb. each. The crops, as in the preceding experiment, were threshed separately and carefully weighed. The following results were obtained:

Plot No.	Straw and chaff,	Lb. grain,	Lb.
1.	627	216	
2.	787	285	
3.	779	280	
4.	783	292	
5.	815	335	
6.	827	328	

OKA AGRICULTURAL INSTITUTE

BY J. E. GRISE, SUPERINTENDENT

THE following is a summary of the experiments that are at present carried on with various chemical fertilizers on some varieties of cereals and hoed crops. The chemical fertilizers that are being experimented with are superphosphate, calcium nitrate and calcium hydrate. The experiments are as follows:

- Plot No. 8 — Barley, O.A.C. Superphosphate at the rate of 1,000 lb. per acre and calcium nitrate applied as a top dressing at two different dates, at the rate of 150 lb. per acre.
- “ 8a Barley, O.A.C. Superphosphate only, same quantity.
- “ 9 — Barley, Canadian Thorpe. Superphosphate, 1,000 lb. per acre, calcium nitrate, two applications, as top dressing, at rate of 150 lb. per acre.
- “ 9a— Barley, Canadian Thorpe. Check.
- “ 10 — Barley, O.A.C. Check plot.
- “ 11 — Common barley (six rowed). Superphosphate only. Same quantity.
- “ 11a Common barley (six rowed). Check plot.
- “ 36 — Wheat, White Fife. Superphosphate, 300 lb. per acre.
- “ 36a—Wheat, White Fife. Check.
- “ 37 — Wheat, Red Fife. Superphosphate, 400 lb. per acre.
- “ 37a Check. Two applications of calcium nitrate, as top dressing, at rate of 150 lb. per acre.
- “ 56 — Wheat, Bishop. 200 lb. of superphosphate.
- “ 56a—Wheat, Bishop. Check.
- “ 78 —Oats, Improved Ligowo. Superphosphate, 400 lb; calcium nitrate, two applications as top dressing, at the rate of 150 lb.
- “ 78a—Oats, Improved Ligowo. Check.
- “ 80 —Oats, Daubeney. Superphosphate, 600 lb. per acre; calcium nitrate, two applications as top dressing, at the rate of 150 lb. per acre.
- “ 80a—Oats, Daubeney. Superphosphate, 300 lb. per acre.
- “ 81 —Oats, Daubeney, Superphosphate, 1,000 lb. per acre; calcium nitrate, two applications as top dressing at the rate of 150 lb. per acre.
- “ 81a—Oats, Daubeney. Check.

- Plot No. 21 —Kohl Rabi, Skirving. Calcium hydrate, 1,000 lb. per acre.
- “ 21a —Kohl Rabi, Skirving. Check.
- “ 22 —Kohl Rabi, Magnum Bonum, Calcium hydrate, 1,000 lb. per acre.
- “ 22a—Kohl Rabi, Magnum Bonum, Check.
- “ 69 —Kohl Rabi, Champion Sutton; 1,000 lb. per acre, applied on two different occasions.
- “ 69a—Kohl Rabi, Champion Sutton. Check.
- “ 70 —Kohl Rabi, American Purple Top. Same experiment as for plot 69.
- “ 70a—Kohl Rabi, American Purple Top. Check.
- “ 71 —Kohl Rabi, Sweden. Same experiment as plots 69 and 70.
- “ 71a—Kohl Rabi, Sweden. Check.
- “ 73 —Carrots, White Vosges. Calcium hydrate, 1,000 lb. per acre.
- “ 73a— Carrots, White Vosges. Check.

All these chemical fertilizers, with the exception of calcium nitrate, were applied immediately after sowing, and all the plots which were used for these experiments were prepared in the same manner. Every plot measured 6 feet by 60 feet, or exactly 1-100 of an acre.

The plots which have received an application of chemical fertilizers are easily distinguished from the check plots by the more vigorous growth of the crop, the stronger stems, the darker colour, the larger leaves, the earlier heads. Those that have received calcium nitrate as well as superphosphate are better still than those which have received superphosphate only. On the other hand, lodging has occurred on some parts, on account of an excess of plant food in the soil and of the extremely heavy rains that fell some time ago. The experiments with calcium hydrate have not so far given any important results, owing chiefly to the fact that the soil con-

tains already a sufficient quantity of lime. However, it should be stated that the plots to which this chemical fertilizer was applied show a rather marked difference as regards the colour of the leaves.

Other experiments that are being carried on this year are the application of plaster on potatoes. The varieties experimented with are the following:

Plot No. 30	- Green Mountain.	Whole tubers.	Plaster.
" 30a	-Green Mountain.	Sets of tubers.	
" 30b	-Green Mountain.	Whole tubers.	No plaster.
" 31	-North Dakota.		
" 31a	- "		
" 31b	- "		
" 32	-Irish Cobbler.		
" 32a	- "		

Plot No. 32b	-Irish Cobbler.
" 33	-Carman No. 1.
" 33a	- "
" 33b	- "

The three last varieties were submitted to the same experiments as the variety Green Mountain. These plots also measure 1-100 of an acre.

Up to the present, no difference can be seen regarding the size of the tubers between fertilized and unfertilized potatoes, but, as regards foliage, unfertilized potatoes are distinctly the best. Potato sets are not so profitable, the tubers raised from them being much smaller and not nearly so numerous; moreover, the stems are not nearly as good as with the fertilized or unfertilized potatoes.

ONTARIO

SCHOOL FAIRS

IT would be difficult to exaggerate the importance of the school fair and the beneficial influence it is having and will continue to have as long as the system shall last. Some objection has been heard on the ground that it exalts certain boys and girls above their playmates and discourages other pupils. If this were a logical objection then the same could be said of all school and college examinations the results of which are publicly announced. The system undoubtedly promotes rivalry, but it also encourages industry, thrift, an early love of nature, a devotion to, and an inherency of, the soil, ambition to serve the community and the spread of communal ideas. In short for every objection that can be advanced a score of answers can be framed. Competition is as much the life of progress in education as it is of trade, and for the boy and the girl there is no immediately higher goal in agriculture to be reached than

is afforded by the school fair. What degrees are to the University graduate awards are at the rural fair to the boy and the girl, and as such should be regarded as most desirable objects of attainment. Nor is the good that is brought about confined to the children; it also extends to the parents and relatives, to teachers, to guardians, to pastors, and, in short, to the whole community. It creates a pride in accomplishment and a general desire for improvement, and this apart from the useful knowledge and valuable experience that is gathered and stored.

The rural fair is common to all parts of the country, but in Ontario, as the most populous province, the number is naturally the largest, there being a total of 236. The fairs are conducted and managed by the District Representatives, assisted by local boards of directors and committees selected from the senior pupils. The construction of the prize list is much the same in every

school, varied only in details and in suitability to the locality. The prize list of the county of Durham, for instance, can be taken as a fair sample. In that county the prize list affords provision for 24 classes, divided into 67 sections, in most of which one dollar is distributed in prizes split up in this way: 40c, 30c, 20c and 10c. Ribbons are awarded in addition to the cash prizes. A seal is also attached to the entry tag corresponding in colour to the ribbon won. No entry fees are charged, the money to defray expenses being derived from subscriptions made by the township councils, the boards of trustees, and public-spirited citizens. Pupils are required to exhibit produce from their own plots and all birds reared from eggs distributed in 1915 must be exhibited. Exhibitors of poultry have to supply their own coops.

THE NUMBER OF FAIRS

The number of fairs by districts in Ontario is as follows:-

DISTRICT	No. of Fairs
Algoma .	6
Brant	6
Bruce	6
Carleton	5
Dufferin	7
Durham	4
Elgin	6
Essex	8
Frontenac	4
Glengarry	6
Grey	6
Haldimand	8
Halton	3
Hastings	2
Kenora	4
Kent	3
Lambton	8
Lanark	6
Leeds and Grenville	6
Lennox and Addington	7
Manitoulin	10
Middlesex	5
Norfolk	9
Northumberland	5
Ontario	5
Oxford	9
Peel	4
Peterborough	4
Prince Edward	5
Rainy River	7
	4

Renfrew	5
Simcoe	8
Fort William	3
Port Arthur	4
Timiskaming	6
Victoria	12
Waterloo	6
Welland	4
Wentworth	2
York	8

The dates of the fairs extend from the second week of September to the second or third week in October, being arranged to suit the convenience of the district.

THE PRIZE LIST

Taking the prize list of Durham as an example the various classes and sections are as follows:—

CLASS 1.—POTATOES, DAVIES' WARRIOR (From seed distributed 1915)

1. Care of Plot.
2. Best peck of Potatoes from plot.

CLASS 2.—DAVIES' WARRIOR (Grown from seed of 1914 plot)

1. Care of Plot.
2. Best peck of Potatoes from plot.

CLASS 3.—POTATOES, EMPIRE STATE—WAR PLOT

1. Care of Plot.
2. Best peck of Potatoes from plot.

CLASS 4.—MANGELS - YELLOW LEVIATHAN

1. Care of Plot.
2. Best five Mangels from plot.

CLASS 5.—FIELD CORN -WISCONSIN NO. 7

1. Care of Plot.
2. Best eight selected Stalks with ears from plot.

CLASS 6.—SWEET CORN—GOLDEN BANTAM (From seed distributed 1915)

1. Care of Plot.
2. Best twelve ears from plot.

CLASS 7.—GOLDEN BANTAM (Grown from seed of 1914 Plot)

1. Care of Plot.
2. Best twelve ears from plot.

CLASS 8.—BARLEY—O. A. C. NO. 21. (From seed distributed 1915)

1. Care of Plot.
2. Threshed Grain from plot.

CLASS 9.—BARLEY—O. A. C. NO. 21

(Grown from seed of 1914 plot)

1. Care of plot.
2. One peck threshed Grain from plot.

CLASS 10.—OATS—O. A. C. NO. 72

(From seed distributed 1915)

1. Care of Plot.
2. Threshed Grain from plot.

CLASS 11.—O. A. C. NO. 72

(Grown from seed of 1914 plot)

1. Care of Plot.
2. One peck threshed Grain from plot.

CLASS 12.—SWEET PEAS—KEITH'S STERLING MIXTURE

1. Care of Plot.
2. Best Bouquet from plot.

CLASS 13.—BEST TABLE BOUQUET FLOWERS FROM HOME GARDEN

(Open to girl pupils only).

POULTRY**CLASS 14.—BARRED PLYMOUTH ROCKS**

(From eggs distributed in 1915. All birds reared must be exhibited.)

1. Best flock, any number, cockerels or pullets, exhibited by one pupil.
2. Best trio from pen—1 cockerel and 2 pullets.
3. Best single cockerel.
4. Best single pullet.

CLASS 15.—BEST PAIR BIRDS—1 COCK AND 1 HEN

(From eggs distributed in 1914)

CLASS 16.—BEST TRIO OF BIRDS—1 COCKEREL AND 2 PULLETS

Hatched from eggs from fowl raised in competition, 1914)

Hatched from eggs from fowl raised in competition, 1914.

SPRING CHICKENS**CLASS 17.**

1. Best trio of birds (1 cockerel and 2 pullets, any breed).
2. Best pair crate fattened cockerels, alive, any breed.

LIVE STOCK**CLASS 18**

1. Best halter broken colt, pure bred or grade—born after January 1st, 1915. To be handled by exhibitor.
2. Best halter broken calf, pure bred or grade, born after January 1st, 1915. To be handled by exhibitor.

DOMESTIC SCIENCE**CLASS 19.—BAKING AND SEWING**

1. Best half dozen Baking Powder Biscuits.
2. Best Layer Cake.
3. Best one dozen Cookies.
4. Best Lemon Pie.
5. Best quart jar of Plum Preserves.
6. Best pound of home-made Fudge.
7. Best Fancy Apron, hand-made, new.
8. Best Hemstitched Handkerchief, new.
9. Best Tray Cloth, hand-made.
10. Best Darning on Stocking.

MANUAL TRAINING**CLASS 20**

1. Best Nail Box.
2. Best Feeding Hopper for Chickens.
3. Best Bird House.
4. Best Handy Farm Device.

NATURE STUDY**CLASS 21.—WEEDS, SEEDS, FLOWERS, LEAVES**

1. Best collection of Weeds, pressed, mounted and correctly named.
2. Best collection of Weed Seeds, correctly named with common name.
3. Best collection of Insects, correctly named with common name.
4. Best collection of Wild Flowers, named.
5. Best collection of Work of Insects and Plant Diseases.
6. Best collection of Native Woods showing bark and surface.
7. Best collection of Leaves of Forest and Shade Trees, mounted and correctly named.

MISCELLANEOUS**CLASS 22**

1. Essay on "How I Grew My Plot"—Open to pupils of grades below Sr. III.
2. Essay on growing "Potatoes," "Mangels," "Corn," "Barley," "Oats," "Sweet Peas," or "Rearing Chickens." This essay need not be confined to knowledge gained from your own plot or flock but may be more general in character. Open to pupils of grades Sr. III and above.
3. Best Map of North America with countries, showing rivers, lakes and important cities.
4. Best writing of "Lead Kindly Light."

FRUIT**CLASS 23**

1. Five Spy Apples.
2. Five Snow Apples.
3. Five A. O. V. Apples.
4. Best collection of five varieties of Apples, five Apples of each variety named.

CONTESTS

CLASS 24

1. Three minute address on any Patriotic Subject.
2. Girls' Sewing Competition. (Work 1 button hole.)
3. Girls' Patching Competition. (For these contests, girls are requested to bring scissors and thimble.)
4. Boys' Tug-of-War Contest. Teams of five boys from each School.
5. SCHOOL PARADE— At 1 p.m. sharp parade of all the Schools once around the grounds, in order of number of School Section. Each school to be led by Director carrying School Flag. Three prizes awarded on following basis:—(1) Deportment, (2) Originality of design for displaying identity of each School Section, (3) Arrangement of pupils, (4) Singing of one Patriotic Chorus.

In classes 15, 16 and 17 the prizes are 50c, 35c, 25c and 15c. In 18

they are \$1.00, 75c, 50c, 25c. In section 4, class 24, the prize is \$1.00 and for the school parade \$3, \$2 and \$1 are the awards, the money to be spent in buying pictures or books for the winning school. In all the other classes the prizes are, as previously stated, 40c, 30c, 20c and 10c.

In some other schools than those of the county of Durham the subjects are more freely divided and the number of prizes is increased, some favoring live stock, vegetables or flowers to a greater extent, others, women's or girls' work, and others, again, athletic sports. Special classes are also provided in instances, the prizes being derived from gifts by residents in the respective districts.

HONEY; A GOOD CROP

THE Crop Report Committee of the Ontario Beekeepers' Association met at Guelph, on Thursday, September 9th, to consider the crop of Dark Honey. It was found that 105 members had reported 116,400 lb. from 5,807 colonies; being an average of 20 lb. to the colony. This is about double last year's average. The committee advised members to ask 7½ cents to 8½ cents per lb. wholesale, depending on the size of package and the quantity sold in one order. No buckwheat honey, it was decided, should be retailed for less than 10 cents per pound.

The local demand for white honey was said to be exceedingly good, as many people were buying honey to put away instead of canned fruit, and the prices recommended by the committee were being realized.

Wholesalers were reported to be cautious about buying all lines of goods, including honey, and naturally have made an effort to buy as low as possible. A few large orders had been filled at a slightly lower

figure than recommended, but these orders were for ton lots.

There is yet a large quantity of light honey unsold, but the market was reported firm and a great many of the smaller beekeepers reported their crop sold at prices recommended by the committee. All considered the committee felt that honey need not be disposed of below prices recommended.

FOR THE RED CROSS

In connection with this year's crop of honey, Mr. Morley Pettit, Secretary-Treasurer of the Ontario Bee-Keepers' Association, has issued a circular letter inviting the 10,000 bee-keepers in the province to subscribe a portion of this year's yield to the Canadian Red Cross Society. Mr. Pettit announces that contributions have already been received and that there is no limit in the size or number of offerings which will be accepted and sent forward. The circular letter explains that the honey should be extracted and granulated in 60 lb., 10 lb., or 5 lb. tins,

well sealed and securely boxed. None but first class quality clover honey should be sent: unripe honey, particularly basswood, or any of the dark grays would be sure to arrive in poor condition. The railroad

companies have agreed to carry contributions free. They should be addressed to the Canadian Red Cross Society, 77 King Street, East, Toronto.

LIVE STOCK STATISTICS

Crop Bulletin, 124, issued by the Ontario Department of Agriculture, gives the numbers of live stock and poultry in the province on July 1 in the last three years as follows:—

	1913	1914	1915
Horses.	779,131	774,544	751,726
Milch cows	1,022,518	1,006,703	1,032,039
Other cattle	1,652,228	1,597,925	1,596,806
Sheep and lambs	908,095	922,375	996,155
Swine	1,769,295	1,770,533	1,618,734
Turkeys	673,494	744,096	699,861
Geese..	416,414	425,300	389,173
Ducks	545,813	586,654	497,734
Other fowls	12,636,360	12,419,164	11,924,615

The number of live stock sold or slaughtered in Ontario for the last three years ending June 20, was as follows:

	1915	1914	1913
Horses.	75,527	81,872	96,841
Cattle	875,394	911,794	880,303
Sheep	489,320	512,066	534,311
Swine	2,110,936	1,984,105	2,078,462
Poultry.	6,764,069	6,575,434	6,325,007

The dairying record in New Zealand is held by the pure-bred Friesian Manor Beet's Daughter II of Ashlynn. She has been granted a certificate on a 365-day production of 18,733.9 lb. milk and 863.51 lb. butter fat.

MANITOBA

DEPARTMENT OF AGRICULTURE REORGANIZED

THE Manitoba Department of Agriculture is being reorganized by Hon. Valentine Winkler, the new Minister of Agriculture.



PROF. S. A. BEDFORD
Commissioner of Weeds and Superintendent of
Demonstration Farms, Manitoba

It has been thought for some time past that something should be done to relieve Professor S. A. Bedford of the burden of detail which he has been carrying as Deputy Minister of Agriculture, in order that his experience could be more generally utilized. Perhaps no agriculturist in Western Canada understands Western conditions better than Mr. Bedford, his experience at the Brandon Experimental Farm and his studies having qualified him for almost any position.

The work of the Department has multiplied at an amazing rate during the past few years until the office de-

mands upon the Deputy Minister have grown exceedingly heavy. It has been decided, therefore, to appoint a new Deputy Minister and to create a new and important office for Professor Bedford at increased salary, namely, that of Commissioner of Weeds and Superintendent of Demonstration Farms. It is Mr. Bedford's intention to solicit the co-operation of the municipalities, the Dominion Land Offices, the Railways, the Bankers' Associations, the Canadian Seed Growers' Association and all landed proprietors as well as the farmers of the country and the press. He will address meetings throughout Manitoba on the subject of Weed Eradication.

In the superintendency of the Demonstration Farms, of which the Department now has sixteen located in various parts of the province, Mr. Bedford will be able to carry on weed eradication experiments as well as many other valuable activities.

THE NEW DEPUTY MINISTER

Mr. A. J. McMillan, B.S.A., the new Deputy Minister, is favourably known as a young agriculturist with high qualifications for the position. He was an honour graduate of the Manitoba Agricultural College in 1911—the first graduating class of the institution. Not only is he a keen student of Western agricultural conditions, but he possesses excellent executive ability.

Mr. McMillan was born at Greenbank, Ontario, and moved to Western Canada while still in his teens. For two or three years he located at Griswold, Manitoba, with Mr. W. J. Young, a well known breeder of pure-bred stock. From there he entered the Manitoba Agricultural College. He was a member of the college judging team which went to the International Live Stock Show

at Chicago. His vacations he chose to spend at the College Farm.

After leaving the Manitoba Agricultural College, Mr. McMillan accepted the position of manager of a large farm, owned by Mr. J. E. Mann, at Bangor, Saskatchewan. Mr. Mann's specialty was growing seed grain.



A. J. McMILLAN, B.S.A.
Deputy Minister of Agriculture for Manitoba

Later on, *The Nor'-West Farmer*, of Winnipeg, appointed Mr. McMillan to the associate editorship, and it is this position which he resigns to serve as Deputy Minister of Agriculture for Manitoba.

PRESIDENT OF THE MANITOBA AGRICULTURAL COLLEGE

Mr. J. B. Reynolds, Professor of English at Guelph Agricultural College for 14 years and M.A. and gold medalist of Toronto University, has been appointed to the presidency of Manitoba Agricultural College.

Mr. Reynolds, who stands high in the estimation of educators, both

East and West, assumed his new duties on October 1st, although the college does not open until the 26th. His connection with the college at Guelph extended over 22 years. He was born on a Canadian farm and, besides his professorial duties, for the last four years he has been engaged in active farming. There is perhaps no branch of agriculture in which he is not versed, including marketing, of which he has been a close student.



J. B. REYNOLDS, M.A.
Principal of Manitoba Agricultural College

NEW COLLEGE BOARD

A new college Board has been formed with Mrs. A. V. Thomas, Winnipeg; David Smith, Gladstone; William Nichol, Brandon; John Sweet, Thornhill, and Joseph L. Parkinson, Roland, as appointees of the government.

Other members were elected and on completion of the Board Mr. James Duthie, of Hartney, was chosen for chairman and Mr. G. H. Greig, of Winnipeg, for secretary.

SASKATCHEWAN

DAIRYING AND OTHER MATTERS

SETTLEMENT OF DEBTS

THE provincial Department of Agriculture has issued a leaflet containing hints and suggestions regarding the settlement of debts incurred by farmers. During last fall and winter the Department did a considerable amount of adjustment between farmers and their creditors. The leaflet is founded upon information thus obtained. The work of adjustment is shortly to be discontinued, it being felt that the farmer should, as far as possible, be allowed and encouraged to conduct his affairs without government interference. Points especially made by the leaflet are that the farmer who finds himself possessed of debts he cannot pay should treat his general creditors equitably, not allowing expert collectors to secure the treatment of certain individuals with favour; that the debts should be divided into ordinary and preferred claims, such as those incurred under stress for living expenses, and that the latter should be the first settled, also that prompt attention should be paid to letters received.

PROGRESS IN BUTTER MAKING

The Dairy Commissioners of Saskatchewan, Alberta and Manitoba recently visited British Columbia with a view of securing the butter trade of that province. In this connection it is interesting to note the progress in butter making made by Saskatchewan under Government supervision shown by the following statement of the production for the first three summer months of the last three years:

Month	1913 Lb.	1914 Lb.	1915 Lb.
May . . .	90,957	139,567	153,103
June	169,066	215,339	314,927
July	253,321	323,778	514,998
Totals	513,344	678,684	983,028
Percentage of No. 1 butter in 1915—98.4.			
Percentage of No. 2 butter in 1915— 1.6.			

CHANGES IN STAFF DUE TO ENLISTMENTS

Relative to the recent enlistments of prominent members of the staff of the Department of Agriculture, it may be stated that Mr. A. F. Mantle's place as Deputy Minister has been temporarily taken by Mr. F. H. Auld, Mr. Oliver, formerly representative in London, Eng., of the provincial Bureau of Labour, taking the latter's position as Secretary of Statistics. Mr. P. F. Bredt will assume the duties of Live Stock Commissioner in the absence of Mr. J. C. Smith. Mr. T. Domaille, formerly one of the department's field representatives, who went with the first contingent and is returning minus one of his legs, has accepted the office of Weed Commissioner during the time that Mr. H. N. Thompson is away.

LIVE STOCK

The shipment of cattle for distribution under the Live Stock Purchase and Sale Act this summer amounted to 14 carloads from Eastern Canada, or approximately 280 head. The high price of cheese put up the cost of Holsteins and made them hard to buy. Cheese was selling at from 17 to 19 cents, instead of around 11 to 13 cents. As a

result more Shorthorns were bought than would ordinarily be the case. The average price was in the neighbourhood of \$85. Some fine stock was secured in Oxford County, Ont. The Live Stock Act was amended last spring so as to allow the selling of bulls on a quarter cash basis. As a result about 70 bulls at an aggregate price of \$12,500 were secured and distributed, compared with 24 bulls last year. Orders are still being received which it is hoped to fill with the progeny of animals purchased in former years. The cattle are going into new districts, one of these being Kerrobert, where a creamery has lately been started. Rush Lake, Debden, and Eldred, north of Shellbrook, have been supplied, and several leaders in the Doukhobor settlement have taken one or more cows. Preparations are being made for distribution of sheep under the Act. It is thought at least 800 will be supplied this year. The demand for high-class sheep is greater than it has been for several seasons and values are higher owing to increased prices paid for wool and mutton. Many inquiries are being received for the

Bulletins on sheep raising and wool growing issued by the Dominion Department of Agriculture and the Bulletin entitled "Sheep in Saskatchewan", written by the provincial Live Stock Commissioner, Mr. J. C. Smith, who has now joined the army.

NOTES

An exhibit of the agricultural products of the province was prepared for the Dry Farming Congress held at Denver, Colo., September 27th to October 6th. Other exhibits were sent forward from different localities. Messrs. Kirk and Fawcett were the commissioners in charge. After the farming congress an irrigation congress was held.

Inquiry has proven that there is some shortage in binder twine, due to some extent to the fact that cash is being asked this year for the twine, no credit being allowed as in former years. The Agricultural Department is taking steps to meet the situation.

BRITISH COLUMBIA

FRUIT MARKETING WORK ORGANIZED BY THE WEST SUMMERLAND WOMEN'S INSTITUTE

BY MRS. LILY FOSBERRY, WEST SUMMERLAND

THIS Fruit Marketing idea occurred to my mind in January last, and on presenting the plan to our Institute it was received with approval and a free hand given me to proceed with the work.

The addresses of the secretaries of all the branches of the Women's Institutes in Alberta, Saskatchewan and Manitoba had previously been obtained from the Departments of Agriculture in the various Provinces. A preliminary letter was sent out

to one hundred and ninety branches in order to get the feeling of the prairie housekeepers on the subject of tree-ripened fruit from a sister organization, and, to the one hundred and twenty secretaries who were sufficiently interested to reply, a circular letter explaining the plan in detail was posted, and later our price list was sent to each secretary.

The replies were in most cases enthusiastic, the only worrying point

being the excessive transportation charges.

As many of our members were not desirous of being actively engaged in this business, it was decided that the expense of letters, price lists, etc., be divided equally among the actual shippers, the Institute funds being required for many other purposes.

In order to give the allotment of the Prairie Institutes or Clubs the necessary element of chance, to satisfy all would-be shippers, and at the same time to provide choice, numbered slips were drawn from the proverbial hat; number one having first choice of the places considered possible or "likely", and the highest number having last choice.

As there were enough places to provide second choice, or two districts for each shipper, "high" number had first chance in the second choice, working back to number one. This was the fairest method that could be devised.

Each woman was asked to immediately communicate with her two clubs, assuring them of her personal interest in filling their orders, and twenty price lists were given her to enclose for distribution.

This plan eliminates the central packing-house with its necessary handling charges, yet makes each shipper responsible to the Institute for the quality and pack of her fruit.

The results to date are not large.

Some of our members have had very good orders, some small orders, and several no reply of any kind. A start has been made, however, and it is reasonable to suppose that the satisfied customers will pass on the good word in the annual reports of the work of their societies, and next year will bring us a much larger business.

When necessary to buy fruit to fill orders, preference is given to Institute members, and in this way some who have had no orders direct from their clubs are helping and being helped.

One possibility to be guarded against is competitive price lists from other Institutes in British Columbia. The lack of system would be immediately recognized in such well organized Provinces as Alberta and Saskatchewan. Should other Branches in British Columbia wish to follow this plan arrangements should be made regarding prices and districts in which to operate.

Up to the present the best business comes from Saskatchewan. Why? Because that Province leads in co-operative movements. Because the Government and all institutions under Government control are unusually liberal minded, progressive and inclined to investigate any move that might be beneficial to their homes and their country.

The annual convention of the Western Live Stock Union, an organization representative of the industry in Canada, from the Great Lakes to the Pacific coast, will be held at the Empress Hotel, Victoria, B.C., on October 27th and 28th. At least 35 delegates will be in attendance, representing 13 or 14 live stock associations in Manitoba, Saskatchewan, Alberta and British Columbia. The business session will be presided over by Dr. J. G. Rutherford, C.M.G., head of the Live Stock Department of the Canadian Pacific Railway.

PART III

Rural Science

SUMMER SCHOOLS FOR TEACHERS

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THE third session of the Summer School for Teachers was held in Charlottetown, July 12th to 23rd.

Instruction was given in School Gardening by Leslie Tennant, B.S.A., of the Department of Agriculture, assisted by Inspectors Crockett and Boulter; in Drawing by Professor Barlow of Prince of Wales College and Professor Lerosé of Montreal; in Botany by Dr. Chrysler, Professor of Biology, University of Maine, Orono, Maine; in Ornithology and Entomology by Professor F. F. Smith, of Buzzards Bay, Mass. In Nature Study by Dr. Fuller, Superintendent of Education, Oldtown, Maine, and in reading by Miss Gorman of Charlottetown. A Normal Course was also provided by the School Inspectors.

The forenoon of each day was taken up by lecture work in the class rooms, while the afternoons were occupied with School Garden and Field work. During the session Dr. Chrysler delivered a public lecture on "Boarders and Lodgers in the Plant World," and Dr. Fuller on "Changing Conceptions in Conduct Control." The whole of the work was made as practicable as possible.

Three hundred and sixty student teachers took the course. The School was under the auspices of the Departments of Agriculture and Education, and was made possible by funds obtained from THE AGRICULTURAL INSTRUCTION ACT. The closing meeting was held on July 23rd, and was addressed by Premier Mathieson and others.

NOVA SCOTIA

BY L. A. DE WOLFE, DIRECTOR OF RURAL SCIENCE SCHOOLS

THE regular summer session of the Rural Science School was held at Truro July 7 to August 5. All classes were well attended; some were over-crowded. The total enrolment was 157.

Of this number 17 were graduates, 35 received diplomas this year while 80 were granted certificates qualifying for an extra grant for the coming year, and 25 failed to pass in as many as four subjects. But a

few of these 25 were failures; for some chose at the beginning to attempt only one or two subjects.

Class lectures, field excursions and out-of-town excursions all proved popular. These summer sessions give many teachers the enthusiasm necessary to carry them through the year. At the end of the year they find it necessary to return for another session; and just keep permanently enthusiastic and useful.

NEW BRUNSWICK

BY P. R. STEEVES, M.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION

TWO Rural Science schools for teachers have been held this year. The session lasted four weeks, July 14th —August 10th, inclusive. The Woodstock School registered 65, and the Sussex school 114 students. At Woodstock only first year students attended; at Sussex there were 30 second-year students who completed the course, and will be granted certificates.

The students at Woodstock were divided into three classes, and at Sussex four sets of classes were made. It is believed that to do satisfactory work of a practical nature, not more than 32 students should be in any one class. Through doing in the school and nature laboratories, observing, noting results, reasoning and judging, individual effort is promoted. It is hoped that the same methods adopted at these schools will be carried by the teachers to their schools, and that the children will be taught in a similar manner.

The subjects taken up were: (1) Soil Physics and Chemistry, (2) Plant Life with School Gardening, (3) Animal Life, (4) Farm Mechanics, Farm Arithmetic and Book-

keeping, Woods and Drawing, (5) Domestic Science and (6) Method.

At the close of the session students were arranged in three divisions, classification being based on attendance in class, work accomplished, whether practical or routine, individual nature study and short written tests of the maximum value of 33⅓ per cent. Emphasis was laid upon the idea that examination is not the goal, but that efficiency in practice is the standard.

Closing exercises of an interesting character were held at both places, presided over at Sussex by the Hon. J. A. Murray, Minister of Agriculture, and addressed at Woodstock by Mr. J. B. Daggett, Secretary for Agriculture.

The social feature was characteristic in both schools. Recreation, games and sports were engaged in. It was our purpose to impress all with the idea that school should be happy and enjoyable, that teachers should encourage their pupils to play heartily that they may work successfully, and that the school is a local institution with community improvement as one of its aims.

SCHOOL OF AGRICULTURE AT STE. ANNE-DE-LA-POCATIÈRE

BY REV. NOEL PELLETIER, DIRECTOR

THE short courses in agriculture which have been followed with the greatest interest by forty-three teachers and instructors of the Normal School have just come to a close.

These short courses which were inaugurated last year, thanks to the Honourable the Minister of Agriculture, have been a great help to the teachers. They will certainly strengthen the work of the school gardens and contribute in no small measure to their success.

SUMMARY OF THE SHORT COURSES

BOTANY AND CHEMISTRY

Prof. M. Geo. Bouchard

- I. Soil chemistry and physics.
- II. General botany.
- III. Special botany. Classification of plants.
- IV. Characteristics of the chief families.
- V. Plant nutrition.
- VI. Knowledge and destruction of weeds.
- VII. Applied course.

SCHOOL GARDEN

M. J. C. Magnan

Horticulture —Rev. J. A. Létourneau and Ls. Alf. Gosselin.

- I. Making a vegetable garden. Rotation. Fertilizers.

- II. Beds.
- III. Cabbages and cauliflowers.
- IV. Tomatoes, celery, etc.
- V. Onions, leeks, etc.
- VI. Seeding, transplanting, watering.
- VII. Applied course.

FIELD CROPS

Rev. H. Bois

- I. Soils.
- II. Ploughing and cultivation.
- III. Farmyard manure.
- IV. Chemical fertilizers.
- V. Hoed crops.
- VI. Meadows.
- VII. Applied course.

CEREALS

M. F. N. Savoie

- I. Cereal botany.
- II. Wheat.
- III. Oats.
- IV. Barley, rye, buckwheat.
- V. Applied course.

UNDERDRAINAGE

M. F. N. Savoie

- I. Principles, advantages and necessity of underdrainage.
- II. Applied course.

BREEDING

M. Jos. Pasquet

- I. The animal machinery.
- II. How to direct its construction.
- III. How to feed the animal.
- IV. The horse, with applied course.
- V. The cattle, sheep, swine, with applied courses.

POULTRY

M. Jos. Pasquet

- I. Different breeds. How to increase the production of eggs. How to produce good young chickens, with applied course.

FORESTRY

Rev. P. Levasseur

- I. Nursery.
- II. Pruning of trees.
- III. Applied course.
- IV. Spraying.
- V. Strawberries and raspberries.

BEE-KEEPING

Rev. P. Levasseur

- I. Care of bees during each month. Diseases and enemies of bees.
- II. Applied course.

THE OKA AGRICULTURAL INSTITUTE

THE annual short courses for the French school inspectors and the normal school teachers were held at the Oka Agricultural Institute from the 2nd to the 14th of August, 1915. These courses were attended by some forty inspectors and teachers. A summary of the programme and of the subjects is given herewith:

CHEMISTRY

Professor H. M. Nagant

- 1. The arable soil: origin and composition.
- 2. Fertilizers:
 - A. Farmyard manure: (a) composition; (b) conservation.
 - B. Chemical fertilizers: (a) classification; (b) use; (c) interpretation of analyses; (d) experimental plots.

AGRICULTURAL BOTANY

Professor N. Ponton

- 1. Knowledge and extirpation of weeds.
- 2. Structure of plants and functions of their organism.
- 3. The plants in their relation to the soil, air, light and moisture.

- 4. Plant diseases.

LIVE STOCK

R. F. Isidore

- 1. Study of the various breeds of live stock.
- 2. Horse, cow and hog.
- 3. Sheep breeding.
- 4. General principles of feeding.

FRUIT CULTURE

Rev. Father Leopold

- 1. Varieties of fruit trees suitable for the different districts.
- 2. Methods of propagation and planting.
- 3. Cutting, growing and spraying.
- 4. Practical lessons in grafting, etc.

GARDENING

R. P. Athanase; J. C. Magnan, B.S.A.

- 1. The vegetable garden.
- 2. The growing of vegetables.
- 3. Hotbeds.
- 4. The school garden.

FLORICULTURE

Rev. Father Leopold

- 1. The place of flowers in the house; in the school.
- 2. Ornamental plants.
- 3. The growing of seed plants, bulbs.

BEE-KEEPING

Rev. P. Maur; Dr. E. Lalonde

1. Care and management of the beehive.
2. Bee-keeping in its relation to agriculture.

POULTRY-KEEPING

R. F. Liguori; R. F. Wilfrid

1. A study of the various breeds.
2. Care of the laying hen.
3. Natural and artificial breeding.
4. Breeding and fattening of chickens.

HAND-WRITING IN RURAL SCHOOLS

J. Chartrand, Professor

MACDONALD COLLEGE

BY DR. D. W. HAMILTON, HEAD OF NATURE STUDY DEPARTMENT

THE first Summer School in Nature Study and Elementary Agriculture for the Protestant teachers of Quebec was held at Macdonald College during the four weeks beginning August 2nd and ending on August 28th. Eighty-three teachers were enrolled and, during the four weeks, they worked hard and earnestly. There were six regular courses: four in Nature Study and Elementary Agriculture, and two in Manual Training and Art, particularly as correlated with Nature Study. (See Outline of Courses.)

In addition occasional lectures and demonstrations were given by different members of the College Staff. Examinations were held at the close and certificates given to those successfully completing the work.

The general feeling as expressed in the addresses and valedictory at the closing exercises held in the Assembly Hall, was that the School had been a great success. The instructors were pleased with the earnestness of the pupils, and the pupils were pleased with the practical character of the work.

Many teachers expressed a desire to attend the Summer School another year if an advanced course were given. To each student who completed the course and obtained a certificate a bonus of \$15, and an allowance for travelling expenses of five cents per mile, were paid out of funds provided by the Provincial Government.

A sum of \$3,000, from the Dominion grant for agricultural education, was used for financing the Summer School. It is expected that in future years much larger sums will be available for the same purpose.

The object of the Summer School is to help those who are willing to help themselves to do better work along lines that make for greater efficiency on the part of pupils in rural schools, and to better the qualification for successfully solving the problems of rural life. Macdonald College, with its beautiful surroundings, large buildings, fine laboratories and equipment, its fields, orchards and gardens, offers every attraction, particularly during the month of August, when nature is most prodigal to those desirous of increasing their physical, mental, and professional qualifications for teaching.

OUTLINE OF COURSES

COURSE 1. NATURE STUDY

1. Aims of Nature Study teaching.
2. Methods of teaching Nature Study.
3. Correlation of Nature Study with other subjects.
4. Nature Study lesson plans.
5. The Nature Study course—explanation of contents, how to teach the lessons suggested, and information on the different topics.
6. Nature Study calendars and records.
7. Birds—their recognition, habits, uses and how to attract them.
8. Trees—their identification, habits, and how to care for them.
9. Wild flowers—their identification, uses, habitat, collection and preservation.

10. Common rocks, minerals, and soils—their recognition, uses and distribution.

Field, garden and laboratory work with plants, birds, trees, minerals and other objects.

COURSE 2. PLANT LIFE

1. The structure and germination of seeds.
2. The general structure and forms of roots, stems and leaves.
3. The work of roots, stems and leaves.
4. The structure and functions of flowers.
5. How plants prepare for winter.
6. The dispersal of seeds and fruits.
7. Leguminous plants in relation to agriculture.
8. Ferns and other flowerless plants.
9. Some common plant diseases.
10. Bacteria and their work.

Practical work in the field, garden and laboratory.

COURSE 3. HORTICULTURE AND GARDENING

1. The propagation and requirements of common plants.
2. The making, rooting and potting of cuttings.
3. The care of house plants.
4. The making and care of window gardens.
5. The best soils and fertilizers for plants.
6. The potting and forcing of bulbs.
7. The planning, planting and care of home and school gardens.
8. The best varieties of garden flowers and vegetables.
9. The planting and care of trees and shrubs.
10. The ornamentation of home and school grounds. Practical work in the garden and laboratory.

COURSE 4. ANIMAL LIFE

1. The different stages in the life of an insect.
 2. The general structure of insects.
 3. The principal groups of insects.
 4. Some beneficial insects.
 5. Some insects injurious to plants.
 6. The relation of insects to diseases.
 7. The natural enemies of insects.
 8. Artificial control of insects.
 9. Native fur bearing animals.
 10. Toads, frogs and other animals.
- Practical work in the field, orchard, garden and laboratory.

COURSE 5. MANUAL TRAINING

1. The theory of Elementary Handwork.
2. The relation of elementary handwork to the Rural School.
3. Materials and equipment.
4. Modelling in clay and plasticine.
5. Paper cutting, tearing and folding.
6. Simple designs and their application.
7. Constructive work in paper and thin cardboard.
8. Weaving, in paper and raffia.
9. Simple basketry.
10. Advanced cardboard construction and simple bookbinding.

COURSE 6. ART

1. Correlation of drawing with nature study.
2. A course in Nature study.
3. A course in design based on Nature drawing.
4. Methods of teaching Nature drawing.
5. Methods of teaching elementary design.
6. Materials and media.
7. Brush drawing in monochrome and natural colours.
8. Nature calendars and records.
9. Lettering.
10. Stencilling and wood block printing.

ONTARIO

BY DR. G. C. CREELMAN, PRESIDENT ONTARIO AGRICULTURAL COLLEGE

THE Summer School held at the Ontario Agricultural College during July and the first week of August was composed of three courses, namely,

- (1) A five weeks' course for Public School Teachers and High School Science Teachers.
- (2) A two weeks' course for the Public School Inspectors.
- (3) A two weeks' course for Rural Leadership.

The first two courses were well attended, one hundred and two taking the teachers' course and seventy-seven taking the course for Inspectors. The course for Rural Leadership was not quite as large as was expected, only fifty-two registering. The work of the teaching staff was well received, and interesting instructive discussions were held. Combined evening sessions were held and addresses were given by promi-

nent men, among whom were Archbishop Neil McNeil and Dr. J. A. Macdonald.

The course for the Public School and High School teachers briefly covered a great deal of the work taken in the first two years in the regular college course at the Ontario Agricultural College. Lectures and practical laboratory work and in some cases field work were given, covering Physics, Botany and Micro-Biology, Field Husbandry, Entomology, Animal Husbandry, Bee Keeping, Horticulture and Gardening, Plant, Animal, and Soil Chemistry, Poultry, and Bacteriology. Collections of Weeds, Fungous Diseases, Grasses, and Insects, were made by each student, and their economic importance studied. Types and breeds of farm animals were studied in the Judging Classes. The different field crops and their relative importance in Agriculture were also taken up.

The course for the Inspectors differed from the teachers' course, in that it consisted entirely of lectures. Many of the same subjects were

taken by them as were covered by the teachers in their lectures, only more comprehensively. Other subjects such as Rural Economics were discussed, covering a wide rural field. Many questions were asked and intelligent discussions were entered into at all lectures, showing the keen interest they were taking in agricultural education.

The school for Rural Leadership was composed mostly of ministers of country churches, although quite a number of farmers, business men, and ladies attended. Their lectures extended over a large field of the activities touching the farmer. Recreation, rural social conditions, the fundamental principals of agriculture, the church, the school, and all the great educational factors carried on in the country by the Ontario Government were each taken up and discussed. Much enthusiasm was shown, and at the close of the course resolutions were passed, recommending the extension of the work and taking it up in all theological colleges.

MANITOBA

BY H. W. WATSON, DIRECTOR OF ELEMENTARY AGRICULTURE

THE Summer School of Science and Handcrafts, held by the Department of Education for Manitoba in the Kelvin Technical High School, Winnipeg, from July 6th to August 6th, was the most successful yet held.

The following courses were offered to teachers:—

Elementary Nature Study, School Gardening and Agriculture; Advanced Nature Study; Light wood-work and Wood-carving; Raffia, Rattan and Paper Folding; Forge Work; Household Science, and Household Art.

Over 150 teachers, male and female, were enrolled in the various

courses, of whom 73 took that of Nature Study, School Gardening and Agriculture.

On the closing day the work of the various students was arranged as a model school exhibition and inspected by many city educators and friends.

Each student in the Nature Study course was required to make the following collections:—

Weeds and Wild Flowers; Economic Seeds, Grains, Grasses, etc.; Weed Seeds; Butterflies and Moths; Galls and Plant Diseases.

On the closing day Dr. Jas. Robertson, of Ottawa, visited the school, saw the students at work in

their various departments, inspected the collections, and afterwards addressed instructors and students on the subject of "The Education of the Hand."

In the evening a literary and musical programme was rendered in the Auditorium and diplomas were distributed to the successful students.

SASKATCHEWAN

BY A. W. COCKS, B.SC., DIRECTOR OF SCHOOL AGRICULTURE

SUMMER courses for teachers in agriculture were held at the University of Saskatchewan, Saskatoon, and in household science and music at the Provincial Normal School, Regina.

All teachers who satisfactorily completed a course in agriculture or household science were allowed their return railway fare by the Department, while accommodation for those taking a course in agriculture was provided by the University at the rate of \$1.00 per day. Teachers who attend two sessions in any of these courses and receive from the Directors in charge satisfactory reports will be granted diplomas.

GENERAL COURSE IN AGRICULTURE— JULY 12-30

Of the forty teachers taking this course 38 completed it satisfactorily. Of these 18 were men and 20 women.

The course consisted of a study of the following:—

1. Nature Study.

- (a) Its place in school life.
- (b) Correlation with other subjects.
- (c) Discussion of field work.
- (d) How to collect, mount, preserve and classify specimens.
- (e) Study of type specimens of plant, animal and insect.

2. Agriculture.

A. Soils:

- (a) Classification and composition.
- (b) Relationship of moisture, temperature, tillage and fertilization.
- (c) Relationship to various kinds of field and garden crops.
- (d) Experimental work.

B. Plants:

- (a) How plants grow.
- (b) Farm crops suited to Saskatchewan.
- (c) Garden crops suited to Saskatchewan.
- (d) Fruits suited to Saskatchewan.
- (e) Trees, shrubs, flowers suited to Saskatchewan.
- (f) Shelter belts.
- (g) Weeds and weed seeds—identification.

C. Animals:

- (a) Relation of live stock, including poultry, to Saskatchewan agriculture.
- (b) Demonstrations—cattle, poultry.

3. The School Garden:

- (a) Its place in school work.
- (b) The school garden—a laboratory for the nature study and agriculture courses.
- (c) Preparation, seeding, care of garden plots.
- (d) Experimental and demonstration plots.
- (e) Plans for school garden.

4. Household Arts:

SPECIAL COURSE IN AGRICULTURE—JULY 19-30

This course was held for principals of public schools, teachers of the natural sciences and Inspectors of Schools.

Thirty-one men teachers, 2 women teachers and 19 Inspectors of Schools took advantage of this course and of this number only 3 (who were absent because of illness) failed to complete the course satisfactorily.

1. Farm crops and animals.
2. Farm implements and machinery.
3. Agricultural chemistry; physics of agriculture; soils and soil management; biology; natural history; tree culture.

In addition conferences on the place of agriculture in the public and high schools of the province were presided over by the Directors of School Agriculture.

The following members of the staff of the Agricultural College made a special effort to make their lectures, experiments and demonstrations as practical and interesting as possible:

W. J. Rutherford, B.S.A., Dean of the College of Agriculture; John Bracken, B.S.A., Professor of Field Husbandry; G. H. Cutler, B.S.A., Professor of Cereal Husbandry; Alex. M. Shaw, B.S.A., Assistant Professor of Animal Husbandry; R. K. Baker, B.A., Assistant Professor of Poultry Husbandry; A. R. Greig, B.Sc., Professor of Agricultural Engineering; J. M. Smith, B.S.A., Assistant Professor of Agricultural Engineering; R. D. MacLaurin, Ph.D., Professor of Chemistry; W. P. Thompson, Ph.D., Professor of Biology; J. L. Hogg, Ph.D., Professor of Physics; T. H. Willing, Assistant Professor of Natural History.

Considerable advantage to the teachers taking the course accrues from the fact that the laboratories, the demonstration plots, the farm crops, animals and machinery were at the disposal of the lecturers who made excellent use of them for experimental and demonstration purposes.

Mr. Norman Ross, B.S.A., Superintendent of the Dominion Forestry Branch, Indian Head, materially contributed to the success of these courses by his lectures on tree-planting, which were illustrated by means of a visit to the forestry farm in the vicinity.

The Directors of School Agriculture who were in charge of these courses cannot speak too highly of the unflagging interest and attention to work manifested by the classes. There is no doubt that these teachers and Inspectors of Schools are determined to co-

operate with the Department in making the movement for more agricultural instruction in the rural and high-schools of the province an unqualified success. Many have expressed a wish to take a longer course next year and as the members of the staff of the Agricultural College are anxious and willing to co-operate with the Department to this end it is probable that courses of four or five weeks will be held during the summer of 1916.

HOUSEHOLD SCIENCE, JULY 12-30

The instruction in this course was given by Miss Fannie Twiss, assisted by Miss Helen McMurtry of Moose Jaw, while Dr. Sutherland of the Provincial Bureau of Health, assisted by Mr. Sutton, secretary of the St. John Ambulance Association, conducted work in First Aid. Lectures and practical work on the following topics were given: Food and its preparation; sewing; household management. Miss Twiss reports the greatest enthusiasm on the part of the teachers taking the course and states that the result of the work was very gratifying. She hopes and expects that a much larger number of teachers will take advantage of this course next year.

Of the 22 women teachers taking the household science course 13 completed the full course satisfactorily, while 8 were able to attend only for half of the time as they were in attendance at the course in music for the remainder of the period.

MUSIC—JULY 12-30

This course was conducted by Professor Hoole of Regina College and 8 women teachers satisfactorily completed the course.

In addition to the above courses Sergt. Carroll conducted a class composed of 14 women teachers in physical training from July 12-30 at the Provincial Normal School, Regina.

UNIVERSITY OF SASKATCHEWAN

BY WALTER C. MURRAY, M.A., LL.D., PRESIDENT

A year ago the first Summer School was held at the University. This year its scope was broadened and the time lengthened. A total registration of nearly one hundred was reached this year, this number including the inspectors of the province.

The students were provided with accommodation in the University Residence during the period of the school. Instruction was given in agricultural subjects by Dean Rutherford and Professors Shaw,

Bracken, Cutler, Greig, Smith and Baker and by Mr. Norman Ross, and in the sciences by Professors MacLaurin, Hogg and Thompson.

The interest in the work of the school was very keen, and excellent results were obtained.

The control of the arrangements for the school was in the hands of Professor F. W. Bates, Director of Agricultural Education in the northern part of the province for the Department of Education.

ALBERTA

FROM NOTES SUPPLIED BY THE PROVINCIAL DIRECTOR OF TECHNICAL EDUCATION

SUMMER schools for teachers were held at the University of Alberta, Edmonton, from July 5th to August 7th, 1915. There was a total enrolment of 310. The subjects taken up were as follows, most of the students taking up two or more:—Agriculture, 200; Nature Study, 135; Household Science, 60; Household Art, 40; Household Management, 40; Art Method, 73; Mechanical Drawing, 28; Penmanship, 35; Woodwork, 20; Elementary Manual Training, 46; Drawing and Printing, 44; Design, 48; Folk Dancing, 60; Physical Culture, 40.

In order not to conflict with the work of the examining boards the special course for teachers of science and agriculture in high schools did not start until July 15th, extending from that date until the termination of the regular course. Those who had specialized in science were asked to devote the full time for one session to the study of agriculture with a view of teaching the course in agriculture for Grade XI more effectively. For those who have not specialized in science or agriculture a course involving two summers' work will be provided, the first summer being devoted to a consideration of

practical methods in Zoology, in Botany, and in Agriculture and Gardening, and the second summer to practical methods in Chemistry, in Physics and in Agriculture, including experiments and demonstration plot work.

In addition a seminar, under the chairmanship of the Director, is organized for the high school teachers and agricultural instructors for special consideration of the problem of instruction in science and agriculture in the high schools.

Next year studies will be offered of Methods in Chemistry, the objects sought to be attained being to give the teacher facility in the handling of chemical apparatus, to improvise for the experimental teaching of the high school course in chemistry, and to teach experimentally as much of the high school course as time will allow. A course will also be given in Methods in Physics, designed to assist those high school teachers who are responsible for teaching Physics in the smaller high schools, but who have not special training in Science. It will deal mainly with the practical and experimental phases of the course required for Grades IX and X.

BRITISH COLUMBIA

BY J. W. GIBSON, M.A., DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION.

SUMMER courses for the teachers of British Columbia were held in Victoria, commencing June 29th and ending July 30th. Six hundred and ninety teachers were in attendance and were enrolled in the several courses, as follows:

Rural Science:		
(1) Preliminary	183	
(2) Advanced	77	260
Household Economics:		
(1) Preliminary	80	
(2) Advanced	27	107
Art:-		
(1) Preliminary	110	
(2) Advanced	33	143
Manual Arts	39	
Manual Training	9	
Vocal Music and Elocution	73	
English Literature and French	59	
Total	690	

The classes were held in the High School, the Normal School and one of the city public schools. At the close of the session exhibits were assembled from the various classes and were open to inspection on the closing evening of the summer school. Upwards of five hundred citizens of Victoria availed themselves of the opportunity of examining the manual work of the various classes, which occupied a dozen large rooms in the new High School.

The course in Rural Science covered a wide range of subjects and seemed to be appreciated by the larger number of teachers who registered in it. The subjects taken in

connection with the course were as follows:

Methods in the teaching of Rural Science:

School Gardening and Agricultural project work; Soil Study, Field Husbandry; Dairying and Animal Husbandry; Poultry Keeping; Plant Studies; Entomology; Bird Study and Forestry.

The work in class room and laboratory was supplemented by field studies and practical work in the school garden. Frequent excursions to parks and ranches in the vicinity of Victoria were arranged, and altogether the course, whilst strenuous enough, was not lacking in those elements of variety and activity that make for recreation. The teachers showed no lack of interest throughout, as the various instructors can testify, and before leaving Victoria many of them formulated plans of work to be initiated immediately on their return to their schools, which in British Columbia opened on the 23rd of August.

Taking last year and this year together 359 teachers (137 male and 222 female) have taken the course in Rural Science, and of these 77 (34 male and 43 female) have completed their second year. Coming as they do from both urban and rural schools and from all parts of the province, we may reasonably expect that these teachers will come to have a large and growing influence on the young people in arousing and developing new interests along agricultural lines.

AGRICULTURAL INSTRUCTION IN SCHOOLS

NOVA SCOTIA

BY A. H. MACKAY, SUPERINTENDENT OF EDUCATION

FOR many years up to 1907, a course covering James' "Agriculture" was given as an option with mineralogy in Grade X of the public schools (second year of the High School course). This was discontinued on the recommendation of the Advisory Board of Education which began to function at that date.

The Board (which is dominated by a classical Professor of the University of Dalhousie) has not only advised the Council of Public Instruction to cut out agriculture even as an optional subject from the high school programme, but recommended the making of all subjects, except English, optional in it.

The Council of Public Instruction has now for 7 or 8 years accepted this advice with the result of eliminating

not only agriculture, but from some high schools the teaching of Chemistry and Physics, so that at the present day many of our teachers have not even an acquaintance with the rudiments of the sciences which up to 1907 constituted a portion of the necessary equipment of every teacher.

This policy is, of course, not recommended by the Superintendent of Education, who is simply the Secretary of the Council of Public Instruction, and is, therefore, very much interested in the progress of the experiment. In the April *Journal of Education* of this year, the Council of Public Instruction has announced the introduction again of "Elementary Agriculture"—now to be optional with the "Physics" of Grade IX (first year of the High School programme.)

MANITOBA

BY H. W. WATSON, DIRECTOR OF ELEMENTARY AGRICULTURE

THE work in Physical Science outlined in the programme of studies of our Secondary schools is taken up by the students of Grades IX and X in High School work. There are about one hundred and ten schools in the Province taking this work, made up of the following: collegiate institutes, 10, high schools 20, the balance being intermediate and consolidated schools. The teachers of this course in these schools will all have, at least, a first class certificate.

Five of these schools have an additional two years' course in agri-

culture, in which the subjects and work covered are similar to those covered by the Agricultural College during the same period. These are our, so called, Agricultural High Schools, for want of a better name. The teachers of these agricultural courses are graduates of an agricultural college. The number of students taking this course in the five schools has totaled about seventy each year during the past two years. The work covered during these two years is fully outlined in the circular of 1913. Last year, we divided the subjects of this

course somewhat differently and arranged them as shown in the following outlines. The course on each will be taken up on alternate years. We saw the necessity of this arrangement in order that one man might be able to do the work more efficiently.

COURSE IN AGRICULTURE FOR THE SCHOOLS OF MANITOBA

A DETAILED OUTLINE OF COURSE "A" WINTER TERM 1914-15 AND ALTERNATE YEARS

FIELD HUSBANDRY. Forage crops with suitable study of soil physics and weeds pertaining to these crops. Text—*Forage and Fibre Crops of America*, by Thos. F. Hunt. Chapters 1, 2, 3, part I, 5; part III, 7, 8, 10; this should be supplemented by articles on Corn, Timothy, Awnless Brome Grass, Western Rye Grass, Red Clover and Alfalfa in the *Fodder and Pasture Plants* published by the Department of Agriculture, Ottawa.

WEEDS. Manitoba Agricultural College Bulletin No. 2. *Twelve Noxious Weeds*.

ANIMAL HUSBANDRY. Horses and Swine: feeds, feeding and judging. Text—*Beginnings in Animal Husbandry*, by C. S. Plumb. Chapters 1, 2, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 21, 22, 23; also chapter 14 in *Elementary Agriculture*, by Hatch & Haselwood. Craig's *Live Stock Judging* for practical work.

VETERINARY SCIENCE. Diseases of Animals and Simple Remedies. Text—*Veterinary Studies*, by Reynolds. Chapters, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 31, 32, 33, 34, 35, 36, 38, 40, 41, 42, 43, 44, 45, 46, 48, 51, 53, 56, 57.

BACTERIOLOGY. Text—*Agricultural Bacteriology*, by Conn. Chapters 1, 3, 10, 11 to page 147.

DAIRYING. Milk and its Products. Text *Milk and its Products*, by Wing. Chapters 7 to 12, inclusive.

HORTICULTURE. Vegetable Gardening. Text—*Vegetable Gardening*, by Green. Chapters 1 (pages 7 to 10), 3, 4 and 6 (pages 65 to 69); and a study of the following vegetables: *Corn, Onions, Rhubarb, Beets, Cabbage, Cauliflower, Turnips, Beans, Peas, Parsnip, Carrot, Celery, Potato, Gourds, Lettuce*, with special reference to those in italics.

ENTOMOLOGY. Text—*Economic Entomology*, by Smith. General structure, ex-

ternal anatomy and metamorphosis as outlined in the five chapters but much simpler and not nearly in so much detail. Also the characteristics of the following orders as shown by a study of representative individuals:—

Hymenoptera - Bees.

Lepidoptera—Cabbage butterfly, Clothes Moths, Cut Worm.

Coleoptera—Potato Beetle, Click Beetle, Lady Bug.

Orthoptera Grass Hopper.

Dipera Housefly, Mosquito.

Neuroptera—Dragon Fly.

Hemiptera—Aphids (Plant Lice) and Animal Lice

MECHANICS AND FARM MACHINERY. Text—*Agricultural Engineering*, by Davidson; part V. Also chapters 1 and 2 and paragraphs 66, 67, 68, in chapter 4 of *Physics*, by Mann and Twist.

CHEMISTRY. Text—*High School Chemistry*, emphasising everything that is of agricultural value. Chapters 1 to 7, including electrolysis, and synthesis of water preparation of N. H. O. CO-2 nascent state, Oxidation and reduction, chemical notation, acids, bases and salts, nomenclature nitrates.

ARITHMETIC. Addition, subtraction, multiplication and division with problems relating to the farm, simple mensuration, decimals, vulgar fractions, averages, interest, discount, and with a simple introduction to the metric system.

OUTLINE OF COURSE "B" 1916 AND ALTERNATE YEARS

ARITHMETIC—Grade X.

BOOK-KEEPING.

ANIMAL HUSBANDRY—Beef and Dairy Cattle; Sheep. Feeds, feeding and judging.

FIELD HUSBANDRY—Cereal Crops.

AGRICULTURAL ENGINEERING—Mechanics; Building Construction; Drawing Plans for Buildings; Power Machinery; Wood and Forge Work.

HORTICULTURE. Fruit Growing; Flower Growing.

GENERAL PHYSICS.

SOIL PHYSICS.

VETERINARY SCIENCE. Anatomy and Physiology.

POULTRY HUSBANDRY.

BOTANY.

CIVICS. Grade IX.

ENGLISH. Grade IX.

DAIRY HUSBANDRY. Milk—Care, Handling, Machinery, etc.

SASKATCHEWAN

BY A. W. COCKS, B.Sc., DIRECTOR OF SCHOOL AGRICULTURE

IN May, 1914, Mr. F. W. Bates and Mr. A. W. Cocks were appointed Directors of School Agriculture for Saskatchewan. Immediately after their appointment they entered upon the revision of the course in agriculture for public and high schools and gave valuable assistance respecting the nature of the changes in the regulations of the Department so far as the character of instruction in elementary science and agriculture is concerned.

At the present time agriculture is compulsory as a subject of study in the public schools. It is also compulsory for a Grade VIII diploma, the qualifying entrance certificate for high schools and collegiate institutes. The syllabus of work for this examination is as follows:

Pupils should become acquainted through observation with the main points connected with the following topics: (Experiments and practical work should be conducted as far as possible in the school garden. Drawings should be encouraged; specimens should be used).

Plants—Seeds. Recognition of common seeds such as wheat, oat, barley, flax, radish, turnip, parsnip, carrot, peas; names of the parts of the seed; mode of growth in bean, corn, radish; experiments to show conditions for germination: seed testing.

The plant and its parts—Root, stem, leaf, buds, flowers, fruit.

Food of plants—Simple experiments to show (a) how the plant obtains its food from the soil; (b) that starch is formed in the growing plant; (c) transpiration.

Weeds—Habits; prevention; eradication; identification; making collections.

Soil—Classification of soils.

Origin of soil; part played by the following agents—air, frost, water, heat and cold, glaciers, plants and animals.

Experiments to show soil constituents such as clay, sand, humus, moisture, etc.; amounts of each in different soils; types of soil best suited to plant growth.

Preparation of soil for crops; conservation of moisture.

Summer fallow—How prepared; advantages and disadvantages.

Farm Animals—Care; characteristics and adaptation of structure to habits.

THE TEACHERS' COURSE

In the case of the Teachers' Course of the high schools, agriculture is prescribed as a subject of study for the first three years and is a subject of examination. The first year in agriculture consists of a preparatory course in elementary science and includes instruction in physics, chemistry, botany, entomology and zoology. These sciences constitute a nucleus for the composite science of agriculture and as far as possible, teachers are required to give the teaching in these subjects an agricultural bias.

During the second year, pupils taking the Teachers' Course are required to pass an examination in elementary science consisting of physics and chemistry and in addition either agriculture or household science. The outline in agriculture is as follows:—

A general discussion of the distribution of plants and animal life as influenced by: temperature, water, soils, climate and environment.

Propagation of plants; pollination; fertilization; cuttings; grafting; budding.

Farm crops; importance of good seed; rotation of crops; eradication of weeds; prevention of plant diseases; destruction of insect pests; harvesting and storage.

Farm animals; various kinds; care and management. A study of the cabbage butterfly; the cutworm; the spider; the bird; the gopher.

The soil: origin and formation; kinds; weight, texture, colour, porosity, etc. Elements of plant food. Soil water, soil air, soil heat, soil organisms, soil fertility.

Tillage and use of farm implements.

Farm management: elementary knowledge of the common business transactions of the farm; crop growth; cost of production, of marketing, of operating, buying and selling; farm labour.

For Second Class diplomas of the Teachers' Course, agriculture is prescribed as an *optional* subject. The outline is as follows:—

Review of the work prescribed for the Junior Form.

Consideration of those plants or parts thereof grown for food, for clothing and for building and manufacturing purposes (*i*) in immediate locality, (*ii*) elsewhere in the province and in other parts of Canada, (*iii*) imported into Saskatchewan from outside Canada.

Plants grown for ornamental purposes, shelter belts and hedges—annuals, biennials perennials.

Propagation of plants; improvement of plants in quality and quantity; variation by environment; selection of plants; fixing desirable characters. (Illustrated from work of plant breeders such as Burbank, DeVries, Gough, Hays, Sanders.)

Study of the complete plant—root, stem, leaf, flower and seed of each of the following orders: Ranunculaceæ, Rosaceæ, Cruciferae, Leguminosæ, Liliacæ, Gramineæ.

Farm crops: wheat and oats, alfalfa and brome grass, potatoes and turnips; onions and lettuce; rhubarb and asparagus; currants and strawberries; ash and spruce; geranium and iris.

A study of the following in relation to the above crops:

Essential plant foods—phosphorus, potassium, lime, nitrogen.

Fertilizers—natural and artificial.

Cultivation and tillage—control of temperature and moisture; preparation of seed bed; rotations; selection of seed; methods of sowing, harvesting, storing and marketing.

Consideration of animal products—for food for man, for food for animals, and for clothing (*i*) in immediate locality, (*ii*) elsewhere in the province and other parts of Canada, (*iii*) imported into Saskatchewan from outside Canada.

Study of types and breeds, feed and food ratios, care and management, improvement, selection and breeding of each of the following: cattle, horses, sheep, pigs, poultry, bees.

Dairy products: milk, cream, butter, cheese—composition, uses, food values, quality, care of, marketing.

Poultry products: Eggs—composition, production, care of marketing. Meat products: fattening, killing and dressing for table and market.

Sources of farm power: animals, electricity, gas, steam, wind, water.

Types and uses of farm implements and machines.

Farm management: size of farm; farm plans for rotations, plots and buildings; estimation of cost of production of farm products in locality; co-operation among farmers; farm accounts.

The examination on the third year work in agriculture is recognised by the University authorities as a matriculation option.

HIGH SCHOOLS AND COLLEGIATE INSTITUTES

In addition to the agriculture taken in the Teachers' Course, provision is made for a short course in Agriculture in high schools and collegiate institutes. This course extends over December, January and February and students taking it may receive instruction in reading and literature, composition, spelling, Canadian history, arithmetic, farm accounts, business correspondence, agriculture. Pupils taking this course are not required to hold a Grade VIII diploma, the entrance examination to high schools, but must satisfy the principal of the school as to their general fitness to benefit by the course. Certain high schools are making arrangements to give instruction in this special course and the Directors hope to persuade several other high schools to make the same provision.

The instruction in agriculture in the high schools must for the present be given largely by the teachers of the natural sciences. In order to assist these teachers to better adapt their methods in these sciences to agriculture a special course for teachers of science was held at the University of Saskatchewan, Saskatoon, during July. Teachers who attend for two years will be granted a diploma which will be recognised by the Department as a certificate of qualification to teach agriculture in the schools of the province. As the demand for teachers of agriculture in the high schools of the province increases it is expected that many fully qualified teachers will better prepare

themselves for this work by taking the B.S.A. course at the University.

It is hoped that in Saskatchewan the high schools and collegiate institutes may give such a course of

training in agriculture, household science and manual training as may cause them to be regarded as state institutions in the widest significance of the term.

ALBERTA

BY D. S. MACKENZIE, DEPUTY MINISTER OF EDUCATION

AGRICULTURE is a compulsory High School subject for all who desire admission to a Normal school to train as teachers in Alberta. The teaching of agriculture is in the hands of the regular science teachers of the High Schools, and in all our leading schools the teachers employed are university graduates who have specialized in science.

The course given at our recent summer school conducted by the Department of Education at the University of Alberta, was for the purpose of enabling the teachers of science to obtain a clearer and more comprehensive grasp of the subject of scientific agriculture, and to correlate the scientific and theoretical phases of the science with the practical experiences of the school gardens. The classes were largely attended and a very live and enthusiastic interest was manifested throughout the courses.

A synopsis of the course in agriculture which these specialists will give in our High Schools during the coming year, and on which a regular departmental examination will be based next summer, shows that the subjects included will be:

1. Soil: Formation, physical properties, agricultural classification based on percentage of humus, sand and clay, relation of soil to moisture, relation of soil to air, relation of soil to heat, soil fertility, suggested exercises for the laboratory.
2. Elementary Soil Chemistry.
3. Preparation of the Seed Bed.
4. Plant Propagation: From cuttings, graftings, budding, layering.
5. Bacteria as Related to Soil.
6. Weeds.
7. Seeds.
8. Plot Work.
9. The Economic Value of Plants: fodders, seeds good for farm animal food, cereals, fertilizers, forestry, shelter belts, fruits.
10. Birds and Insects.
11. Animal Husbandry.

The General references include: Elementary Agriculture for Schools, McCaig; Vegetable Gardening, Green; Agricultural Botany, Percival; Conn's Agricultural Bacteriology; Types and Breeds of Farm Animals, Plummer; Chemistry of the Farm, Warrington; Cereals in America, Hunt; The Soil, King; Grasses and Forage Crops, Malte; Bulletins and Reports of Provincial Department of Agriculture, Edmonton; Bulletins of Dominion Department of Agriculture, Ottawa. As previously stated this course will be taken by all Alberta students who desire to qualify as teachers.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

AGRICULTURE AND WAR IN MEXICO

IN Mexico corn is the staff of life of ninety families in a hundred. In the scarcity of corn Mexico has had all her problems. The scarcity of corn is one of the great reasons for the conflict in my country today. The bread of our people, the tortilla, is made from our corn. The old bad methods our people use in making corn brings about a scarcity of tortilla, and then there is a discontent and groaning under burdens that make revolutions."

"A land famine for my people has starved them into madness. Seventy-five hundred families owned all the land and 6,500,000 families were land barren. We must redivide our land so that more than half our people have farms. If we could find some way of giving each revolutionist a farm to-day every man of them would lay down his arms and make a home for himself again. But the bandit chiefs who drive them will never let this be until they have filled their pockets with stolen gold."

Thus recently spoke Zeferino Dominguez, the Mexican Corn King to Barton W. Currie, the author of an article referring to his ideals and his work published in a recent number of *The Country Gentleman* under the title of "An Exiled Mexican Corn King." His cereal majesty is described as an exile from his own country, because he will not attach himself to any of the factions. Thus he finds himself, as Mr. Currie puts it, being "swung around" Texas by the railroads with a commission to tell the farmers how to raise better corn and more of it. He speaks slowly in plain language, using apt and simple illustrations that all can understand. His originality of expression has an especial charm. Before the revolutionists drove him from Mexico, he cultivated 40,000 acres of corn. Now, not only as a lecturer, but as a practical seedsman and cultivator he is being engaged by large estate owners in Texas and New Mexico to plant and

manage large tracts of land in corn. Here is one of his similies which fairly illustrates his style of address:

After describing corn seeds as struggling creatures, some of which turned out cripples while others proved robust and whole, he said, "Nature will take care of the cripples as a mother will take care of a weakly son. She will take away from the strong to give to the weak. She knows that up above the ground each one of these seed children must fight for life against insects and birds, and not enough moisture.

"It is all very good to think how kind Mother Nature is to her cripples, and your poet can write a pretty song on it, but for a man who is raising corn it is not so good unless he is lazy and would accept too much charity. He will find his field a home for cripples, whose children are worse cripples. They will die down and shrink in long dry weather; they will have in them germs of disease, which make them unfit, and in each cripple life there will be one long tragedy. Man can do no good with these tragedies, for he lives too short. Nature lives endless times and can from century to century make changes that give new strength and health to a stronger breed. As I see each grain of corn I see a life history, and I know from the study and experiment I make, and from what I read of what other men have done, that I can throw down and cast out the cripple and grow only the strong.

"I know also that I must grow the strong so well that he will grow stronger. This I do by giving him feed enough and moisture enough and having him come up well in the strong sunlight."

On another occasion he used this illustration:

"You know, of course, the theory of pulverizing the soil, but let me show you

how true it must be by illustration with some lumps of sugar, some grain sugar, some powdered sugar and some coffee."

Dominguez sent for the sugar and coffee and three saucers. In one saucer, he placed three lumps of loaf sugar.

"Now," he said, "you see the soil when it is hard and tight. No plough has broken it; there has been no disking. See where the coffee goes when I pour it." He poured in the coffee and immediately the lumps of sugar sucked it up by capillary attraction until they were completely saturated.

In the second saucer, he placed three lumps of sugar, and on top of these lumps heaped little mounds of granulated sugar. He poured some coffee in the bottom of the saucer. The lumps became saturated, and the granulated sugar became moistened almost to the surface.

"In this second saucer," he said and he seemed as delighted as a child with his simple experiment -- "you see the soil that has had some ploughing, but not very fine. The moisture does not all escape to the surface and dissipate away into the air. Where you have much rain to granulate your topsoil it may be enough; but now let me show you what you must do where you have so little rain that your moisture is very precious."

In the third saucer he placed three more lumps of sugar, and on top of these spooned out little mounds of powdered sugar. He poured out the coffee, which ascended to the top of the lumps of sugar, but went

no higher. The powdered sugar remained pure white and perfectly dry.

"Ha!" he exclaimed. "You see the good dry-farming methods. The powdered surface holds down the moisture like a blanket, and the roots of your plants drink it, and have it when there is drought and scorching sun."

Dominguez says, he has made a test of defective seed used in the United States by buying several thousand samples at the corn expositions from representative agricultural districts of the whole country. He found that the American farmer had lost more than 682,000,000 bushels of corn a year by using dead seed. In the state of Texas, he found that the defective seed ran from 27 to 45 per cent. In Iowa, it went from 22 to 40 per cent. In Georgia, it was from 40 to 60 per cent. The waste the American farmer has in the 108,000,000 acres cultivated in corn is, he thinks, enough to supply the needs of the world. He had produced as high as 280 bushels of corn to the acre. He referred to the advantage of ploughing some time before planting, and the importance of realizing how long that time should be, and concluded by remarking:

"There are farmers who think they have done all things if they just buy or raise good seed; others think they have done all things if they work the soil properly. They do in halves, and they reap in halves."

In this deliverance on the value of sowing good and pure corn seed, we have an earnest and practical lesson, not only in the value of purity in that description of seed, but in all kinds, varieties and sorts.

WINNIPEG GRAIN EXCHANGE

IN his address at the annual meeting of the Winnipeg Grain Exchange, held on September 9th, 1915, the president, Mr. S. T. Smith, after stating that the acreage of all kinds of grain this year showed an increase compared with last year of 14 per cent, said that a careful review of the situation had led him to estimate the yield at:—

Wheat	235,000,000 bushels
Oats	270,000,000 "
Barley	54,044,138 "
Flax	6,645,370 "

Placing the prices at 85 cents per bushel for wheat, 35 cents for oats, 46 cents for barley, and \$1.45 for flax, in store at Fort William or Port Arthur, this gives a grand total in value of \$328,746,089.98. Speaking of handling the largest crop the West has ever known, Mr. Smith foresaw no

difficulty. During the fall of 1913, he said, until the close of navigation there was moved a total of 126,000,000 bushels of all kinds of Canadian grain from the head of the lakes. Of this amount about 56,000,000 bushels went in Canadian bottoms to Canadian lower lake ports, leaving about 76,000,000 bushels to go by way of Buffalo and other United States channels. In 1914 during the same period, a total of 66,000,000 bushels were shipped, of which 48,000,000 bushels went in Canadian bottoms to Canadian ports and 18,000,000 bushels to Buffalo and other United States ports. Having dealt with the difficulties of ocean navigation, Mr. Smith concluded by stating that, considering the situation as a whole, the future appeared much brighter than could have been hoped for, taking the war into account.

The officers elected were: President W.

E. Milner; vice-president, W. C. Gage; secretary-treasurer, Dr. C. N. Bell; council F. J. Anderson, J. E. Bottrell, Geo. Fisher, G. W. Head, David Horn, Donald Morrison, C. B. Piper, Jas. A. Richardson, S. Scott, R. E. Wright.

The Northwest Grain Dealers' Association on September 1st gave this estimate of the crops for Manitoba, Saskatchewan and Alberta: -

Wheat	12,540,000 acres	at 20	bushels per acre:	250,800,000 bushels
Oats	6,621,000 "	45.4	" "	300,593,400 "
Barley	1,153,000 "	34	" "	39,202,000 "
Flax	520,000 "	9.3	" "	4,836,000 "

THE NOVA SCOTIA ENTOMOLOGICAL SOCIETY

BY PROF W. H. BRITTAIN, PROVINCIAL ENTOMOLOGIST

A meeting to organize a society to be known as the Nova Scotia Entomological Society, as a branch of the parent entomological organization in Canada, the Ontario Entomological Society, was held in the Assembly Hall of the Normal College, Truro, on August 3rd, 1915.

A programme had been prepared for the occasion, and the following papers were presented: -

1. Life History Notes on the Parsnip Webworm: C. B. Gooderham, Truro.
2. The Teaching of Entomology in the Public Schools: L. A. DeWolfe, Truro.
3. The Brown-tail Moth in Nova Scotia: G. E. Sanders, Bridgetown.
4. Insects in Their Relation to Plant Diseases: Prof. H. W. Smith, Truro.
5. The Apple Maggot in Nova Scotia: C. A. Good, Truro.
6. Protective Coloration: E. Chesley Allan, Yarmouth.

7. Some Hemiptera Injurious to the Apple: Prof. W. H. Brittain, Truro.

Dr. A. H. McKay, Superintendent of Education, also spoke a few words of encouragement and advice to the members of the new society.

After the reading of the papers, officers for the year were elected as follows: -

Honorary President: Dr. A. H. McKay; president: Mr. E. Chesley Allan; vice-president: Mr. L. A. DeWolfe; secretary-treasurer: Mr. W. H. Brittain; assistant secretary-treasurer: Mr. G. E. Sanders; committeemen: Mr. C. A. Good and Mr. J. M. Scott.

At the close of the meeting 31 of those present signed the roll of the society and handed in their annual subscriptions. With this promising beginning it is hoped that the Nova Scotia society will develop into one of the most flourishing branches of the parent organization.

VACANT LOT GARDENING IN TORONTO

THE Dovercourt back-yard contest, promoted by a land corporation in Toronto, was a complete success. At the presentation of prizes in Massey Hall, consisting of cups, medals and household articles, donated by prominent citizens, three thousand people attended and the mayor of the city presided. The principal promoter of the competition, Major W. S. Dinnick, said that if the back-yard gardens of Toronto were properly cultivated a saving of \$1,875,000 would be effected in the domestic bills of the city. Of the 616 gardens entered in the contest 513 produced vegetables with an average

garden of a thousand square feet. It was figured that the gardeners in the contest had saved themselves \$14,492 after allowing for expenses. Among the medal winners was Joseph Mantell, the most aged gardener probably in Canada, being 105 years old. Several women figured among the winners of prizes. In addition to the cups and medals 70 cash prizes were subsequently awarded. Professor H. L. Hutt concluded the meeting with an illustrated lecture. An exhibition of products from the gardens held in connection with the meeting attracted a great deal of attention.

VACANT LOT GARDENING IN BRITISH COLUMBIA

BY HERBERT CUTHBERT, INDUSTRIAL AND PUBLICITY COMMISSIONER

THE movement for the cultivation of vacant lots was started by the Victoria and Island Development Association in September, a year ago, with the object of relieving the unemployed. There were about thirty lots placed under cultivation through the movement at that time.

The reason more of them were not taken up, was that the unemployed could not see their way to do much work on them in the fall, because they did not know how long they were likely to be unemployed, whether they would be able to continue the work in the spring or not, and therefore, they were unable to determine whether or not what work they did do on them would be lost and without any benefit.

However, the publicity which was given to our movement, had a considerable effect in inducing people to cultivate their own vacant lots, and others, to secure them independently of the Association.

In the spring of this year, the Affiliated Friendly Societies took up the question again, and secured a piece of ground from the Provincial Government, divided it into about 115 lots, and these have been steadily cultivated with considerable success throughout the spring and summer.

I believe that the movement has done a great deal of good. I am quite sure that a large number of people have been benefitted from it, and those who have cultivated the lots with any degree of success have raised some very fine crops.

We have now on exhibition in our rooms, several varieties of vegetables that have been raised on these lots, some of them without any irrigation whatever, just simply through dry farming methods, which are as fine as anything that can be grown in the district, in fact some samples are a great deal better than most of the vegetables grown in private or market gardens. There are also three small exhibitions in the basement of the provincial government buildings, of vegetables grown in the same way.

I understand that people have realized from \$40 to \$140 from their crops on these lots. Of course, the cultivation of this vacant ground has had a slight effect upon the prices of vegetables that come in about the same time.

After carefully considering the whole matter, I believe that it is a most excellent movement, but more particularly for the small householder with a family, who has not very much work, because he can raise all the vegetables he needs for a year, will have a little to sell, and will thus be able to help out in keeping his family in a practical and beneficial way.

To the individual who is unemployed I do not think it is very much use, because he does not know whether he will be able to continue his work or not, nor does he know whether he will be in the same city or not when his crops mature.

I hope that at least the same number, if not a great many more vacant lots, will be under cultivation during the coming year.

INCREASE OF FARM MACHINERY

WHILE the United States exports of farm machinery have declined in the past year from \$40,000,000 to \$10,000,000," says J. M. Pierce, editor of *The Iowa Homestead*, "I am confident our exports will rise with leaps and bounds once peace is declared. In ten years, prior to the outbreak of the present war, the exports of farm machinery more than doubled (from \$12,432,197 in 1899 to \$25,694,183 in 1909 and to \$40,600,000 in 1913), while in twenty years they increased tenfold. While all this was going on, the American farmer was proving himself a much better customer than his rural cousin in Asia, Europe and South America. In the ten years between 1900 and 1910 the value of the implements and machinery owned and used by the farmers of the ten states commonly called the grain belt (Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, Illinois, Nebraska,

Missouri, Kansas and Oklahoma) almost doubled, increasing from \$282,095,000 in 1900 to \$521,712,000 in 1910. Even this remarkable ratio was greatly surpassed by three of the ten states, the ratio of increase in the ten years being 157 per cent in Oklahoma, 186 per cent in South Dakota and 212 per cent in North Dakota. The farmers of Iowa and Kansas to-day own and use as much farm machinery as is manufactured in the entire year in all the 640 factories of the United States, employing an army of 60,000 workers. All told, these ten states, out of the forty-eight in the Union, possess 42 per cent of all the farm implements and machinery operated in the United States. It has been bought from a little army of implement dealers, 9,000 in number, in the ten grain belt states, while the remaining thirty-eight states of the nation have less than 6,000 implement dealers altogether."

AGRICULTURAL INSTRUCTION IN ONTARIO

THE Ontario Department of Agriculture and the Canadian Pacific Railway have completed arrangements to run Agricultural Demonstration Cars over the railway's Ontario lines from October 4th to November 15th. The equipment will consist of two coaches, one for transportation of the various classes of live stock produced in Ontario, including heavy horses, beef and dairy cattle, poultry, swine and sheep. The other coach will contain illustrative and demonstrative material covering seed selection and testing; identification and eradication of weeds; rodding of farm buildings; drainage; soil moisture; poultry raising, housing and equipment; insects and fungus diseases attacking farm, orchard and garden crops; feeds and feeding; marketing farm products; etc, etc.

Competent instructors will be in charge of the equipment throughout the day, prepared to answer questions. Valuable agricultural literature will be distributed to those who avail themselves of this opportunity of visiting the Better Farming Coaches.

In order that the farmers may be permitted to thoroughly inspect the many educational exhibits contained in the coaches, the Department of Agriculture have arranged for the cars to remain a full day at each place visited, the instructors being in charge from 9.30 a.m. to 5.30 p.m., except at a few places, where the coaches will be open for inspection for the afternoon only. One of the Department's

most competent Women's Institute workers will, at 2.30 p.m., daily address the local Women's Institute. At 8 p.m., a public meeting will be held in the Town Hall of the place visited, when addresses will be given by lecturers from the staff of instructors. These lectures will be supplemented by lantern views, and, in those places where electricity is available, moving pictures, illustrative of up-to-date agriculture, will be shown. These pictures have been secured by the Department of Agriculture at considerable cost, and should prove not only entertaining, but educative.

Competent men will be in charge of the live stock, and will demonstrate the characteristics of the various classes represented, and give instruction in judging, breeding and feeding from 2.30 to 5.30 p.m. Where possible, live stock will be secured locally to supplement the animals carried on the train. Seats will be provided for the use of those attending the live stock judging demonstration, and, should the weather be unfavorable, a tent will be erected.

The staff of instructors will be drawn from the Agricultural College, the Department of Agriculture and the regular Institute staff. Only men with special training and experience have been selected to give instruction. The Hon. Mr. Duff, Dr. Creelman, Prof. G. E. Day, and other well known leaders in agriculture will address some of the evening meetings.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

Report of the Minister of Agriculture for the Dominion of Canada for the Year ending March 31st, 1915. The operations of every division and branch of the Department are fully described and reviewed in this report, which shows that the year was one of the greatest activity. Many reforms were brought about, a number of innovations introduced and some useful legislation passed. Among the acts placed on the statute book were: An Act to regulate the Manufacture and Sale of Dairy Products and to prohibit the Manufacture or Sale of Butter Substitutes, and an Act to regulate Cold Storage Warehouses.

By Orders in Council the Meat and Canned Food Act was amended in several particulars; regulations relating to tuber-

culosis were made and established for the purpose of ensuring a pure and wholesome milk supply for the inhabitants of many cities and towns of Canada and especially to prevent the sale of milk from tuberculous cows; further regulations under the Dairy Industry Act, 1914, were made and established; the regulations under the Cold Storage Act were amended by additions; orders and regulations regarding patents of invention were made and established under authority conferred by the "War Measures Act, 1914"; the regulations under the "Destructive Insect and Pest Act" respecting destructive insects, pest and plant diseases established by order in council of the 4th November, 1914, were twice amended; there was published in THE CANADA GAZETTE an order relating to patents for the purpose of granting licenses in Canada similar to that granted

by the British Board of Trade under date 4th November, 1914; regulations amending the Animal Contagious Diseases Act, and relating to trading with the enemy.

Reference is made to the gratifying exhibit made by Canada at the Panama Exposition and to the presence of the Dairy and Cold Storage Commissioner at the sixth International Dairy Congress, held at Berne, Switzerland, in June, 1914, and to the representation of Canada at the tenth International Veterinary Congress in London, England, in August, 1914, by Dr. F. Torrance, Veterinary Director General.

After reference to the appointment of a fruit commissioner to relieve the Dairy and Cold Storage Commissioner, a summary is given of the main activities of the Dairy and Cold Storage Branch. This is followed by reviews of the work of the Seed Commissioners' Branch, the Live Stock Branch, the various divisions of the Dominion Experimental Farms and Stations, the Health of Animals Branch, the Meat and Canned Food Division, the Fruit Branch, the Branch of the Canadian Commissioner of the International Institute of Agriculture and the Publications Branch. Then come tables relating to patents of invention, trade marks and so on and particulars of the work of the Public Health Branch.

An Appendix supplies the report of the Director General of the Public Health, Dr. F. D. Montizambert, covering through his staff all sections of the country; the report of the Canadian Exhibition Commissioner, Wm. Hutchison, regarding the Dominion exhibit at the Panama Exposition, San Francisco, and the order of the Board of Agriculture and Fisheries of Great Britain relative to the importation of dogs.

THE EXPERIMENTAL FARM

THE DIVISION OF HORTICULTURE

Hardy Roses; Their Culture in Canada, by W. T. Macoun, Dominion Horticulturist, and F. E. Buck, B.S.A., Assistant Dominion Horticulturist. Bulletin No. 85, of the Division of Horticulture, replaces Pamphlet No. 9, the information being greatly amplified from the results of later experience and investigation. "Our experimental work with this flower", says the Director of the Experimental Farms in his introductory letter, "extending as it does from Prince Edward Island to British Columbia, makes it evident that roses may be grown fairly readily in many districts where it was at one time supposed to be quite impossible to produce them with any measure of success save under glass." In their introduction the authors remark: "It is true that some roses are more difficult to grow than most

other ornamental shrubs, but there are certain roses that are very easy to grow, and those who are not prepared to give the Hybrid Perpetual, Hybrid Tea and Tea roses the attention their beauty merits will find in the Rugosa Hybrids, the Austrian briars, Provence or Cabbage and Damask roses a very good assortment which are hardy and of early culture, requiring little pruning and not being troubled much with insect or fungous enemies." In the 39 pages of which the Bulletin consists, the fullest information is given regarding site and soil, plants and planting, cultivation and watering, manuring, pruning, winter protection, insects and fungous enemies, propagation, etc. The results of tests and experiments are also supplied with a variety of descriptive plates and illustrations.

THE HEALTH OF ANIMALS BRANCH

Enterio-Hepatitis or Black-head in Turkeys, by Chas. H. Higgins, B.S., D.V.S., F.R.M.S., Pathologist—Bulletin No. 17 of the Health of Animals Branch. With the assurance that the production of turkeys should receive greater attention in Canada than has been the case during past years, this Bulletin increases its importance. Enterio-Hepatitis or blackhead is a disease of fowl, infectious in its nature, usually seen in its most aggravated and fatal form among turkeys. It is a modern complaint, having been first mentioned by the late Professor A. G. Gilbert in the Experimental Farms Report for 1900. Since that time, Dr. Higgins states, it has been repeatedly reported upon evidence obtained at the Biological Laboratory, Ottawa, and the Bacteriological Laboratory of the Ontario Agricultural College. The losses from the disease, the doctor further states, have been enormous. Hence the reason for the Bulletin, in which methods of infection and of prevention and treatment are fully described. Raisers of turkeys are invited to send suspected or identified cases to the Biological Laboratory, Ottawa, for examination. A series of plain and coloured illustrations increases the enlightenment furnished by the publication.

Avian Tuberculosis, by Chas. H. Higgins, B.S., D.V.S., Pathologist, and A. B. Wickware, V.S., Assistant Pathologist—Bulletin No. 18, of the Health of Animals Branch. As the prevalence of avian tuberculosis is becoming more apparent in Canada every year, it is of the utmost advisability that both recognition and remedy should be prompt. This Bulletin explains the symptoms and course of the disease, details the results of experiments in transmission and in prevention and invites the co-operation of everybody interested in poultry raising. Cases have been known in canaries, parrots and other

pets, by which the disease in instances has been transmitted to man.

Is Leucocytozoon Anatis the Cause of a New Disease in Ducks? This question is asked and answered in a 21-page pamphlet written by A. B. Wickware, Assistant Pathologist, Health of Animals Branch, Biological Laboratory, Ottawa, and taken from *Parasitology*, Vol. VIII, No. 1, June 25, 1915, published at the University Press, Cambridge, England. "During the past summer numerous inquiries were received," the pamphlet states in the opening paragraph, "by Professor Elford, Dominion Poultry Husbandman, Experimental Farm, Ottawa, with regard to an apparently infectious disease appearing among ducks. So frequent and insistent were the appeals for aid in this connection that the co-operation of the Health of Animals Branch was requested. This resulted in an investigation being undertaken to ascertain the clinical nature of the disease; to demonstrate, if possible, the cause, and also to institute measures for its prevention." This quotation explains both the object and contents of the Pamphlet, in which it is further explained that, "as a serious outbreak had occurred on a poultry farm in the vicinity of Ottawa, Ont., which threatened to jeopardize the existence of the plant, this place was chosen as a favourable location for commencing studies." The young ducks had been dying on an average of 20 a day, we are told. This would continue for a few days, then there would be a remission, which would be followed by a more disastrous outbreak. The symptoms, the principal of which is a disinclination to eat and a preference to stay in the water, are described and the causative agent revealed in the *Leucocytozoon anatis*. The discovery, nature and appearance of the parasite are set forth in detail and exemplified by a series of vividly coloured plates. Photogravures are also given of infected and convalescent ducks. Transmission experiments have been made and are still in progress but, up to the issuing of the publication, not with the complete success desired. In fact the report is acknowledged to be preliminary, but published by consent of the Veterinary Director-General.

THE FRUIT BRANCH

According to Fruit Crop Report, No. 4 (September, 1915), of the Fruit Commissioner's Branch, no improvement in the apple crop had been reported. Wet weather had militated against the crops in Ontario, developing fungous diseases. In Nova Scotia the apple crop did not average more than 30 per cent of No. 1. Taking the Dominion as a whole it is thought 1915 will be remembered as a year of low

production and poor quality. A summary of United States prospects shows an average of 40 per cent in New England, 60 in the eastern states, 69 in the Middle West and 75 in the West. Shipments of peaches from the Niagara District were heavy. Less acreage and cold and rainy weather made the tomato crops light. Mildew affected the grapes, but an 80 per cent crop was expected. Plums suffered from rot owing to the wet weather in the Niagara district. In British Columbia the quality of the fruit was good, but prices did not correspond. Pears were generally good. Owing to the development of scab, the apple crop, it was announced, would require careful grading. Directions are given for sending specimens of insects to Dr. C. Gordon Hewitt, Dominion Entomologist, and of bacterial or fungous disease to H. T. Güssow, Dominion Botanist, Central Experimental Farm, Ottawa.

THE SEED BRANCH

Report of the Seed Commissioner, 1914. It is gratifying to know, on the authority of this report, that the policy of soliciting the co-operation and support of seed merchants in the attempt to rid the trade of badly contaminated seed has been most encouraging. It is also stated that there has been a marked improvement in the trade and a gradual decrease in the violations in proportion to the number of dealers and farmers whose seed has been inspected. A statement shows the number of field competitions, seed fairs and provincial seed exhibitions held during the summer of 1913, and the winter of 1913-14 on which subventions were paid. A summary of the information obtained from the inquiry regarding wheat, oats, barley and flax being used for seed in Canada, with deductions therefrom, occupies three pages. The corn situation, timothy seed production, weed seeds in farm lands, terminal elevator screenings, vital new seeds at different depths and ages are comprehensively dealt with. Details of seed testing at the Ottawa and Calgary laboratories are followed by a variety of facts regarding noxious weed seeds and particulars of the methods adopted in conducting tests. The comprehensive fifty-one page pamphlet concludes with a report of results obtained from seed inspection, of the source of supply, and of places of shipment, with tables of production, exports and imports and the number of violations by provinces of the Seed Control Act.

Grain Screenings. Under this title a grey-covered pamphlet of 44 pages has been issued by the Seed Branch, of which John R. Dymond, B.A., Seed Analyst of the Branch, is the author, jointly with E. S. Archibald, B.A., B.S.A., Dominion Animal

Husbandman, and F. C. Elford, Dominion Poultry Husbandman, the last two named contributing "Results of feeding Experiments." "An idea of the extent to which grain is sometimes contaminated by weed seeds", says the Pamphlet, "may be had from the following analysis of a sample of a car of western-grown flax. The weed seed made up 16 per cent of the total weight of the car. One ounce contained the following weed seeds: *Noxious* - Hare's-ear mustard 73, stinkweed 106, wild mustard 1051, western false flax 429, round-seeded false flax 170, tumbling mustard 1009. *Other kinds*---Lamb's quarters 152, cinquefoil 10, black bindweed 14." The Pamphlet then proceeds to speak of the Composition of Screenings, Uses of Screenings, Grinding Screenings, Screenings in Feeding Stuffs, Flax seed Screenings, and Feeding Experiments. After exact and elaborate details, in tabular form and otherwise, have been given of the experiments, a solution of the problem is suggested, and the conclusions arrived at as affecting the grain grower, the thresherman, the miller, the feed manufacturer and the stockman, set forth, the whole concluding with a summary emphasizing the importance of the subject and stating that "while it is desirable to utilize everything in grain screenings of good feeding value, it would be better to burn than to permit their use in ways that will bring about any increase in the number or distribution of noxious weeds."

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

QUEBEC

Drainage Plans for Farmers. Circular No. 8 of the Quebec Department of Agriculture gives precise advice on the value and desirable methods of drainage. "Underground drainage," the Circular starts by pointing out, "carries off the water from the soil, warms it, makes it porous, remedies excessive drought or humidity, and increases the yield of crops. The money spent on drainage constitutes an investment at a high rate of interest. An acre of land well drained can yield as much as two acres not drained." The Circular announces that to encourage the practice of underground drainage, the Minister of Agriculture of the province offers farmers to have plans made free of charge for draining their lands by professors of the agricultural schools, who will also give the farmer an estimate of the cost and other information necessary for the proper execution of the work.

Fruit Trees Culture. Fruit Branch Circular, No. 9, of the Quebec Department of Agriculture, urges every owner or occupier of a lot, whether it be large or small,

kitchen garden or flower garden, to plant fruit trees. The varieties of apples, pears, plums, cherries, strawberries, gooseberries and currants best adapted for the province are set forth along with advice relative to cultivation and the selection of stock for planting. Notice is also given to orchard owners and fruit growers that the Department of Agriculture has an organization which is prepared to supply all the information or counsel that may be desired.

ONTARIO

Fruit Branch Circular No. 4 (August) of the Ontario Department of Agriculture gives information regarding the operations of the Co-operative Fruit Growers of Ontario, Limited, the central organization of the Apple Shipping Associations of the province, of which there are fifteen doing business through the sales department. Plans are in formation for the placing of a representative in the English market. The Circular also records in detail the progress of the advertising campaign of the Niagara Peninsula Fruit Growers' Association and furnishes a variety of crop and market news.

Co-operative Marketing Association. Mr. F. C. Hart who is responsible for Bulletin, 234, of the Co-operation and Markets branch of the Ontario Department of Agriculture, in this 23-page publication gives complete details for the organization of these associations. The Bulletin is in fact a book of methods, rules and regulations, the publishing of which serves a most useful purpose.

Agricultural Societies' Report. The fifteenth *Annual Report of the Agricultural Societies of Ontario* and of the convention of the *Ontario Association of Fairs and Exhibitions* for 1915 makes a 112-page Book. Besides being profusely illustrated with full-page and half-page cuts of horse and cattle types, of field and fruit exhibits at fairs, of model farm buildings and of scenes at the short course for judges at the Central Experimental Farm, this publication conveys a deal of valuable and practical information to exhibition and agricultural society managers and executives. The report of the Superintendent is comprehensive, dealing particularly with the field crop competitions, the acreage of which increased from 35,000 in 1913 to 60,000 in 1914, and the number of competitors from 3,500 to 6,400, requiring the service of 110 men to judge. Despite the war the autumn exhibition season of 1914 in Ontario was most successful. Addresses by Dr. G. C. Creelman and Professor George E. Day of the Ontario Agricultural College and by others are embodied in the report. Directions for feeding beef breeds for exhibition and a paper by Mr. W. H. Pal-

mer of Ohio on "Desirable and Undesirable Types of Drafters' Legs and Feet" merit special attention.

MANITOBA

Rye as a Weed Eradicator, published by the Manitoba Department of Agriculture, is a circular giving the tentative results of the experience of farmers in the Morden-Rhineland district in keeping down noxious weeds by growing fall rye and spring rye. These grains have been grown in that district for over five years. Their cultivation was undertaken in the first instance for the money value of the rye crop, but owing to the additional value of these grains as a means of eradicating weeds their cultivation has been extended until a substantial area is now sown.

Bee-Keeping in Manitoba, by R. M. Muckle, B.S.A., Inspector of Foul Brood and General Apiarist for Manitoba, is Bulletin No. 18 of the provincial Extension service. In the introductory letter President Black of the Manitoba Agricultural College states that the interest in bee-keeping is steadily increasing in the province and that many enquiries are being received. In its 24 pages the Bulletin, which is well illustrated, deals with bee-keeping in all its phases. It also gives the text of the act passed by the legislature last year for the suppression of Foul Brood among bees.

The Department of Education has issued a Bulletin for the use of teachers containing official notice with hints and suggestions for the class-room, garden and playground. The latter includes suggested outlines in drawing for rural schools, conditions with score card of the Jehu corn competition and particulars regarding bulb culture.

Suggestions on the Treatment of Alkali Soils. A good deal of information on alkali and its effects is given in Circular No. 30 of the Extension Service of the Department of Soils of the Manitoba Agricultural College, by Professor F. G. Churchill. A summary at the back of the Circular reads:

1. Alkali soils contain an excess of soluble salts.
2. They are caused by lack of rainfall, poor drainage and surface evaporation.
3. There are two classes, "black" and "white".
4. At the present time there is no practical chemical means of treating white alkali.
5. Provide the best possible drainage either open or tile.

6. Make heavy applications of manure to add humus.

7. Plough deep and cultivate thoroughly.

8. Crop with sugar beets or mangels.

9. Anyone wishing to have soil tested or aid in drainage, apply to the Department of Soils, Manitoba Agricultural College.

Cultivation after Harvest for Weed Control. The following advice is given in Circular No. 32 of the Extension Service of the Manitoba Agricultural College, for which T. J. Harrison, B.S.A., Professor of Field Husbandry, is responsible:

"Understand the habit of the weed and apply cultivation that will be most effective.

"For annual weeds, such as wild oats, surface cultivation in the fall, such as disking or skim ploughing, will cause some of the weeds to germinate and they will be killed by the frost.

"With the winter annual weeds, such as stinkweed, the same method will hold good, but a surface cultivation must be given in the fall or early spring, for these weeds are not killed by the frost.

"The only method of effectually killing the perennial weeds, such as sow thistle, is by starving them out. This can be done to best advantage by surface cultivation with a duck-foot cultivator.

"If bad weeds are to be controlled the farmer must be persistent in season and out of season."

The Circular contains instructions on the best method of suppression and destruction of noxious weeds that can be applied in the fall.

SASKATCHEWAN

Tenth Annual Report of the Department of Agriculture. In a book of 319 pages the entire story of official agricultural operations in the province of Saskatchewan during 1914 is here told. Starting with a list of the officials of the department, the main report includes reports from all the different branches, the majority of which have already been referred to in THE AGRICULTURAL GAZETTE. As an introduction the Deputy Minister reviews the proceedings of the year, tells of the failure of crops in some districts and of the relief work that had to be undertaken; speaks of the 1,285 horses given by the provincial government to the British government for army purposes; refers to the work undertaken in the marketing of wool, in the implement investigation, and by the Commission on the Herd Law; gives the names of the winners of domestic science scholarships for the past three years; mentions the giving of scholarships to students from Saskatchewan attending schools of home economics or household science in Ontario,

Quebec and Manitoba, and the disposition of funds derived under THE AGRICULTURAL INSTRUCTION ACT of the Dominion. Relative to the last mentioned subject the report says: "It has been possible to greatly enlarge and strengthen the staff of the College of Agriculture, add to its extension activities, organize and stimulate home-makers' clubs, extend the scope of several of the branches of this department, conduct a better farming train, assist the work of the Saskatchewan Veterinary Association and provide for the expert supervision of school agriculture, through the medium of the grant received from the Dominion Government under the provisions of THE AGRICULTURAL INSTRUCTION ACT." Tables are printed giving the results of competitions and various activities of the Department, also statistics of shipments, receipts, products, agricultural industries, land transactions, settlements, the crops and so on.

ALBERTA

International Irrigation Congress. The report of the proceedings of the Twenty-first International Irrigation Congress, held at Calgary, Alta., October 5th to 9th, 1914, makes a publication of 402 pages, and has just been issued by authority of the Minister of the Interior. Addresses and papers by many prominent officials and expert authorities on irrigation are embodied in the report. There are also a large number of portraits, scenic illustrations and diagrams. The first congress was held in 1891 and, excepting 1892, 1901 and 1913, has been held every year since. This year the congress was held at Denver, Colo., where it was also held in 1894. Last year proceedings were commenced by H.R.H. the Duke of Connaught touching a button at Ottawa, releasing flags which were draped over a portrait of His Royal Highness.

Then came messages delivered by the Lieutenant-Governor of the province from the Governor-General of Canada, and the President of the United States. Just as the proceedings were instructive and interesting, so is this verbatim report which is deserving of close study, not only by those who farm dry land, but by all concerned in the cultivation of the soil. Nor is the information therein contained confined to any one section of country, or series of sections, but extends to nearly every state of the Union as well as to the western provinces of Canada. An especially attractive feature of the congress was the exhibition of agricultural and horticultural products held in connection therewith and which was repeated at the meeting held this year at Denver. Upwards of \$4,000 was paid out in prizes, a list of the winners being included in the report.

BRITISH COLUMBIA

A circular addressed to the secretaries of Women's Institutes of British Columbia points out that under the Rules and Regulations of the Department of Agriculture, every meeting of an institute, except the annual meeting, must be advertised on two or more posters displayed in prominent places in the district. Copies of all notices must be sent to the Superintendent of Institutes, to the Secretary of the Advisory Board and to the District Representative.

Root Seed Growing. The opening sentence of Circular Bulletin, No. 13, of the Live Stock Branch of the Department of Agriculture, for which Wm. Newton, provincial Soil and Crop Instructor, stands sponsor, sufficiently explains the object sought to be attained. It points out that British Columbia at the present time is dependent upon outside sources for root-seed and urges the undesirability and unwisdom of this, seeing that indications suggest that there are numerous districts in the province where root-seed production promises to become a profitable agricultural industry. The Circular then proceeds to speak of the necessities of the production, how it can best be cultivated, stored and disposed of. The cost of growing root seed in the United States is quoted as follows: Turnip 1½ to 3c. per lb., yield, 1,000 to 4,000 lb. per acre; beet, 2 to 4c per lb., yield, 1,000 to 3,000 lb. per acre; carrot, 3 to 6c per lb., yield 800 to 2,000 lb. per acre. Study of cultural conditions is, of course, a necessity, and then, the Circular declares, under favourable conditions, root seed production will prove profitable.

MISCELLANEOUS

Recent publications received from the Department of Agriculture, New South Wales, are: *The Agricultural Gazette* (official) with articles on Mendelism, sand in horses, the carbonizing of wool, late blight in potato, value of Broom millet seed compared with Sorghum, results of experiments, etc.; "Egg-Laying Tests," a Bulletin dealing with the thirteenth year's results; "Wheat Culture", a very complete story of the cultivation of wheat in New South Wales, which it is shown occupies 81.8 per cent of the cultivated lands to-day as compared with less than 40 per cent 24 years ago.

The twenty-seventh annual report of the Massachusetts Agricultural Experiment Station, Part I, is styled "Public Document No. 31." It contains reports from half a dozen branches and details the results of a number of experiments, principally with fertilizers and in the treatment of pests.

MISCELLANEOUS

The Journal of Heredity for September contains a variety of attractive matter. Among other features is a symposium on plant breeding, to which the Dominion Horticulturist contributes a paper. Besides Canada, Maryland, Nebraska, Michigan and South Carolina afford subjects that are dealt with in this connection. A series of photographs of large trees possess special interest. A review of "War's Aftermath," a book that is the joint work of David Starr Jordan and Henry Ernest Jordan, and a paper by W. H. Lamb, of the United States forestry service, will repay perusal.

The more co-operation is systematized in a business sense the better it will be for the movement. Bulletin No. 225 of the United States Department of Agriculture gives a description of a system of accounting, for which G. A. Nahstoll, Assistant in Co-operative Accounting, and W. H. Kerr, Investigator in Market Business Practice, are responsible. The Bulletin gives the following as the accounts that need to be kept: capital stock, land, building, office equipment, fixtures, cash, bills receivable, bills payable, accounts receivable, accounts payable, inventory, merchandise, purchases, sales, trading account, fruit, fruit profit and loss, commission, expense, interest and discount, reserve for depreciation, reserve for bad debts, profit and loss, surplus and dividend, and not only tells in detail how each is to be kept but supplies the precise form in which it is to be done. Two methods are described which have been devised to meet the requirements of the smaller organizations handling deciduous fruits and produce on a commission basis. A special system has been prepared for the requirements of the potato exchange which buys outright from the grower or pool on a basis of the day's sales. A full account of the systems is given in the

Bulletin of Foreign Agricultural Intelligence for July published from the office of the Canadian Commissioner of the International Institute of Agriculture.

Service Publication No. 5 of the Quarantine Service of Australia, lately received, consists of a Review of Recent Literature and Work on the Epidemiology of Plague. "Recent research," says the Bulletin, "has shown that while it is important to prevent the entry into a country of animal carriers of plague infection, yet the maintenance of rat-free zones in and around the ports is of equal and possibly greater importance."

National Progress is the name of a new monthly publication in Toronto that, as a second title, styles itself, "The International Magazine of Inspiration and Opportunity." It is a résumé of the industrial and agricultural situation of the period and makes a feature of information regarding patents.

The twenty-fourth volume of the Canadian Ayrshire Breeders' Herd Book has just been published by the Canadian Ayrshire Breeders' Association and issued from the office of Canadian National Live Stock Records, where it was compiled and edited. The pedigrees given range from 41726 to 45155. The volume opens with a series of photographs, including that of the present president of the association, Mr. P. D. McArthur, and those of the late James McCormack and the late John Morris, the former of Rockton, Ont., and the latter of Petit Brule, Que. Two dozen full-page photogravures of cows with records and championship bulls follow and then come the constitution and by laws, reports of meetings, the farm register, points for judging, record rules, etc., concluding with the usual complete indices.

BOOK REVIEWS

Beekeeping; a Discussion of the Life of the Honeybee and of the Production of Honey, by Everett Franklyn Phillips, Ph.D., in charge of Bee Culture Investigations, Bureau of Entomology, United States Department of Agriculture; 457 pages with 190 illustrations; Rural Science Series, L. H. Bailey, Editor; The Macmillan Company, Limited, New York and Toronto, 1915; Price \$2.

Here is a work that from its completeness deserves to be regarded as a classic on the subject of which it treats. There is not an aspect in which the bee and its product is not regarded. Nor does the author con-

fine himself to his own particular country. He travels far afoot for both his illustrations and his text. His work, he assures us, was not planned as a book of rules to which one may go for directions for each day's work, for beekeeping cannot be treated correctly in such a way.

Starting with beekeeping as an occupation, with reference to the extent in which it is carried on in the United States and Canada, and by whom, the author goes on to tell of the equipment that is necessary, of the colony and its organization, of brood rearing, development stages, life and character of the individual, races and

regional differences, the reduction of disturbances, seasonal management, swarm control, production and care of beeswax, the sources of nectar and pollen, diseases and enemies, the rearing of queens and other matters through two dozen chapters.

Not the least interesting section of the work is devoted to a history and description of the bee and its habitation, from the mud hives in Palestine to the ornate dwellings that have been established in Austria, Germany, and some parts of the United States.

In speaking of the extent to which beekeeping is practised, an estimate of 800,000 as the number of persons engaged in this pursuit in the United States is struck, while the value of the honey produced is placed at \$20,000,000, and of beeswax at \$2,000,000. Canada, it is suggested, produces about one-tenth that of the United States, and yet Provincial Apiarist, Morley Pettit estimates that there are 300,000 beekeepers in Ontario alone! But with upwards of a million people devoted to the work in the two countries the importance of the industry can hardly be over-estimated. Therefore is the book that Doctor Phillips has written, and the Macmillans published, of much value and worthy of notation and study.

Elementary Agriculture for Schools, by James McCaig, M.A., LL.D., published by authority of the Minister of Education for Alberta.

A text book so complete as this work of 256 pages, with 86 full page and half-page

illustrations, is well calculated to fulfil its mission in the schools of the province of Alberta. James McCaig, M.A., LL.B., who stands sponsor for the book, has performed his task well. The work is divided into four parts and a supplement, the first part comprising a series of studies on the soil, the second being a study in plant life, the third dealing with tillage, including drainage, conservation of moisture, dry farming and irrigation, and the fourth with crops, including classification, rotation, forage, roots and tubers, trees, gardens and grounds, and plant enemies. The supplement describes types of farm enterprise and types and breeds of farm animals. While intended primarily for the schools of Alberta, this is a work so plain and explicit in its terms, and so thorough and comprehensive in its teaching, that not only early students in agriculture, but those more advanced, may gather a deal of information within its covers, and information that will often smooth the way to advanced experience. "The book", says the author, "has in view the limitations of the public school with respect to the teaching of a subject that is an art as well as a science. The public school is not a trade school. The teaching of agriculture in the public school is education through agriculture rather than agricultural education. At the same time, agriculture is an applied science, and the parts of it that can be properly taught are the parts that should be included in the public school programme of studies." The illustrations are especially apt and instructive, showing the historical and material progress and features of all branches of farming, both plant and animal.

NOTES

Horses to the value of £28,901, representing 799 in number, were exported from Great Britain during July, 1914. For July, 1915, the number was 1,541 and the value £69,887. The average price per horse for the month in 1914 was £36.35; in 1915 it was £46.

A test has been made in New Zealand of twelve White Leghorns and twelve Brown Leghorns fed with and without wheat for twelve weeks. The results were, with wheat, White Leghorns, eggs laid, 352, Brown Leghorns 239; without wheat, White Leghorns, 328, Brown Leghorns, 278. The cost of production being less, the test showed that the greater profit rested with the birds fed without wheat.

In half a century the land under cultivation in Australia increased from 1,188,282 acres to 11,893,838 acres. In the same period the horses increased in number from 431,525 to 2,165,866, the cattle from 3,957,915 to 11,744,714, the sheep from 20,135,286 to 92,047,015, the swine from 351,096 to 1,025,850.

The following are among the increases by value in exports from Canada to New Zealand for the year ending March 31st, compared with the previous year: Flour, wheaten, £3,197; grain, prepared, £1,200; wheat, £116,635. Among the decreases were: fruits, fresh, £9,000; seeds, grass and clover, £3,000; agricultural machinery £27,000.

The number of horses, cattle, sheep and swine in Denmark on May 15, 1914, and 1915, was as follows:

	1914	1915
Horses	567,240	525,600
Cattle	2,462,862	2,416,471
Sheep	514,908	533,034
Swine	2,496,706	1,918,627

The butter and cheese imported by Great Britain from Canada this year and last up to June 30 were as follows:

	1914 tons	1915 tons
Butter	41	443
Cheese	60,763	62,192

From Australia and New Zealand the imports were:

	1914 tons	1915 tons
Butter	42,685	39,768
Cheese	34,923	33,563

No butter was imported by Great Britain from the United States, but in 1914 there were 1,169 tons of cheese and in 1915, 15,106 tons, the greatest amount in one year ever known.

In 1873 a Mrs. Tibbetts planted two Bahia navel orange trees at Riverside, Cal. Those two trees are still living and bearing fruit, but their offspring cover 100,000 acres that produce 25,000 car-loads of fruit, containing about 10,000,000 boxes of oranges. Trees have been sent to Japan, Australia, South Africa and other citrus districts, and they are flourishing. This kind of orange has not, however, taken kindly to Florida.

In an article on Intensive Farming *The Journal of Agriculture*, published officially at Wellington, New Zealand, is responsible for the following interesting statistical comparison of pastoral conditions in that country and in England and Wales:

	New Zealand	England and Wales
Total agricultural and pastoral areas	40,163,886 acres	30,934,648 acres
Area supporting almost exclusively live stock	39,410,664 "	26,561,266 "
Percentage of agricultural and pastoral areas supporting live stock	98.12 per cent	85.89 per cent
Crops specially grown for live stock	1,398,236 acres	11,959,192 acres
Percentage of agricultural and pastoral areas of crops specially grown for live stock	3.48 per cent	35.45 per cent
Area under forage crops	691,375 acres	1,778,310 acres
Percentage of agricultural and pastoral areas under forage crops	1.73 per cent	5.75 per cent
Total live stock carried, expressed in their equivalent in sheep	42,013,573	73,270,222
Live stock carried on area supporting live stock, expressed in their equivalent as sheep per acre	1.04	2.76

The number of cattle in France, according to official census, on July 1st was 12,286,849 against 14,807,380 on the corresponding date of last year, a decrease of 17 per cent.

Errata. The legend under picture on page 856, September number of THE AGRICULTURAL GAZETTE, should read "Equipment for Household Science, Cobourg Rural School, Saskatchewan", instead of "Cobourg Science Department, Saskatchewan", and that under the picture on page 857 should read "Noon Lunch at Cobourg Rural School, Saskatchewan," instead of "Noon Lunch at Cobourg Household Science Department, Saskatchewan."

The four-year-old Aberdeen Angus bull, Eveureux of Harviestoun (31905), bred by J. E. Kerr, Harviestoun Castle, Dollar, Scotland, and imported as a yearling by J. D. McGregor, Brandon, Man., has been sold for \$4,500 to Messrs. Caldwell, Burlington Junction, Missouri. Eveureux of Harviestoun is by Prince of Wassail (23751), dam Evodina (42185). The price for which he was sold is said to be the second highest ever paid for an Aberdeen Angus bull. He is one of the entries at the Panama Exhibition.

Following were the judges of horses at the Panama Exposition, San Francisco: Samuel Bell, Wooster, Ohio, Belgian draft horses; Chas. W. Burgess, Sr., Wenona, Ill., Shire horses; Dean C. F. Curtiss, Ames, Iowa, Percherons; G. Howard Davidson, Millbrook, N.Y., ponies other than Shetlands; Henry Fairfax, Aldie, Va., Hackneys; Alexander Galbraith, Edmonton, Clydesdales; George B. Hulme, New York, hunters; Walter A. Palmer, Ottawa, Ill., standard-bred, light harness horses; Chas. Elmer Bailey, Lexington, Ky., saddle horses; W. J. Rutherford, Saskatoon, Sask., Shetland ponies; Jason G. Waters, New York, heavy harness horses.

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The Agricultural Gazette of Canada

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OF CANADA

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THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

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OFFICIAL AGRICULTURAL PUBLICITY

IT is estimated that a sum approaching a million of dollars will be spent by scientists this year in Canada in an effort to discover useful truths, methods and processes with respect to husbandry. This work has been going on for years until there is an accumulation of information that, if expressed in farm practice, would result in financial independence and great social progress. On one occasion Secretary Houston, of the United States Department of Agriculture, truthfully said: "If we could get all that we know, and all the Departments know and all the best farmers know, to the farmers that are not especially informed and successful, we could revolutionize the nation." It is a great achievement to discover such information but to get it to the husbandmen and all of them in useful form, is, perhaps, even more difficult. This is fully realized by government officials and consequently, there are issued for distribution in ever increasing quantities, reports, bulletins, and leaflets. It is true, as pointed out by a recent writer, that "some fall by the wayside and the mice of the fields make nests of them; some fall on the stony ground of unreceptive minds; but some come to the attention of the earnest, light-seeking men and boys and girls and bear fruit an hundred fold."

The distribution of government publications has been the subject of much study and experiment and still there is much to learn as to how those that would profit by the printed information may be most effectively reached. With this in view the governments of Canada, Provincial and Dominion, have adopted what to each appears to best meet the requirements. For a number of years the system employed by the federal Department of Agriculture, to reach the farmers of Canada, has been passing through a period of evolution, until a fairly satisfactory method has been evolved. This system is fully explained in this number of THE AGRICULTURAL GAZETTE and with it, by the courtesy of the provincial Deputy Ministers of Agriculture, the systems employed in the various provinces. Many good points have thus been brought together in the hope that all the husbandmen of Canada may have the opportunity of appropriating the information worked out for them by government officials.

THE AGRICULTURAL INSTRUCTION ACT

ITS MATERIAL AND INTRINSIC VALUE AND ITS SPHERES OF OPERATION

FEW measures have been adopted of more material and intrinsic value to the farming interests of Canada than The Agricultural Instruction Act, introduced in Parliament by the Honourable, the Minister of Agriculture, in 1913, and accorded the royal assent on June the sixth of that year. As its provisions have on various occasions been given and referred to in THE AGRICULTURAL GAZETTE, there is no necessity to refer to them at length and in detail at this time. The matters of most interest at this juncture are the working and the value of the Act, both of which are fully described in the recently issued report of the Commissioner of Agriculture. It is, therefore, to this publication of upwards of 160 pages, and which forms Sessional Paper No. 93, 5 George V, that attention must be turned for information.

THE POLICY

"Pending the adoption of a definite line of policy", says the Report, "and in order to enable the provinces to extend their work and enlarge the foundation upon which the future federal policy might be worked out, the Parliament of Canada, on the recommendation of the Minister of Agriculture, in 1912 appropriated the sum of \$500,000, payable to the provinces on the basis of population as determined by the last census." By far the larger proportion of this grant, which was made under the measure known as "The Agricultural Aid Act", was expended for educational purposes. It was a sort of a trial, but the purpose sought was so

well served that the following year "The Agricultural Instruction Act", enlarging and confirming the scope of the policy originally intended, was formulated and adopted. This Act provides for the distribution of ten million dollars in ten years, beginning with \$700,000 the first year and increasing by \$100,000 for four years, when the amount to be divided among the provinces will have reached \$1,100,000, and will there remain until the end of the decade. Before division there are two provisions that have to be satisfied, namely, one of a grant of \$20,000 to the veterinary colleges, and another of \$20,000 to each of the provinces regardless of population. After deducting this \$200,000 the remainder is to be yearly divided among the provinces according to population. This much of an explanation is necessary in order to make any review or notice of the Report understandable.

VETERINARY INSTRUCTION

How the work of the veterinary colleges is advanced by the grant of \$20,000 is first described. In passing, it may be said that it is impossible to over-estimate the worth to the public of a work that has for its object the maintenance of the health of domestic animals, by the aid of which we live, and by contact with which, if, in any way diseased, we might easily die. At present there are two recognized veterinary colleges in Canada that share in the grant, one known as the Ontario Veterinary College and the other as The School of Comparative Medicine and Veterinary Science. The

former is affiliated with the University of Toronto and the latter with Laval University, Montreal. Each is aided by the respective province, but the work of both is greatly promoted and extended by the federal grant, which is allotted in proportion to the number of pupils.

THE FOUR LINES OF WORK

From time to time the amount granted to each province, and the use to which it has been put, have been detailed in THE GAZETTE. The Report goes minutely over all this ground. It shows that the education and instruction of the people resolves itself into four lines of work—Public Schools, where the boys and girls should be imbued with a love of nature and attachment for the soil; Agricultural Schools and Colleges, where the foundation previously laid is further fostered and developed into a higher and directly practical grade; Extension Work, by which the college is taken to the farm, thus making immediately obtainable a knowledge of the best methods for tilling and cultivating the soil, and carrying on agricultural pursuits generally, resulting from scientific research and years spent in tests and experiments; Women's Life, by which it is sought to lighten the drudgery of existence for the woman on the farm.

"The woman's cause is man's. They rise or sink

Together. Dwarf'd, or godlike, bond or free;

If she be small, slight-natured, miserable,
How shall men grow?"

THE ADVANCEMENT MADE

The report proceeds to outline how the work of school and college, extension methods and the advancement of load-lightening in the case of the woman has progressed by the aid of the grant and under the Act. According to provinces it tells the story. In Prince Edward Island learned professors of agriculture at

a fair salary have been engaged and agricultural instruction improved and developed. In Nova Scotia extensive additions have been made to the college buildings and additional facilities provided for agricultural instruction. In New Brunswick one agricultural school has been equipped and another erected, while all the expenses of teaching agriculture are met out of the federal grant. In Quebec enlarged buildings and increased equipment have been provided for the Oka Agricultural Institute and The Agricultural School at Ste. Anne-de-la-Pocatière. Funds have been provided also for seven additional instructors at these institutions and for eight at Macdonald College. The work of equipping the new veterinary college at Montreal has also been met.

THE FIRST YEAR

It must be premised that this Report covers only the first year of the Act. As the grants increase so will the work being done and the benefits derived under the Act become more pronounced.

IN ONTARIO AND THE WEST

In the first year then in Ontario, new buildings were erected at the Ontario Agricultural College at a cost of \$96,000 and five additional instructors were added to the staff.

In Saskatchewan eleven additional instructors for extension work were engaged. In Alberta part of the equipment of the three agricultural schools was provided and the maintenance of the schools was met out of the funds forthcoming under The Agricultural Instruction Act. In British Columbia similar benefits have been derived.

EXTENSION WORK

Each of the provinces made provision out of the federal grant for short courses, helpful to advanced students and teachers; the amount

thus involved being \$38,500. Quebec made grants also to private schools in order that they be encouraged to supply agricultural instruction. Several of the provinces have appointed special officers to superintend the teaching of farm and garden subjects. Federal appropriations amounting to upwards of \$32,000 were made in five provinces for agricultural instruction in public schools, including school gardens.

IN AMERICA AND IN EUROPE

The Report reviews at some length—giving extracts from various authorities and publications in doing so—the progress that is being made in agricultural instruction in the United States and in Europe, the example of Belgium, before devastation, being specially quoted.

WOMEN AND DEMONSTRATIONS

Reference is made to the aid that is being granted to women's institutes for the betterment of women's lot on the farm. Relative to the \$93,000—devoted to demonstrations—plus \$10,000 set apart for demonstration trains in New Brunswick, Quebec and Manitoba—the Report points out that to reach the great mass of the rural community, to touch and influence the indifferent farmer and the new settler, something must be done that brings results right home to him, to the man himself, to the members of the family, to the help, and, if possible, right on his own farm. Demonstrations, it says, from which the farmer cannot eliminate himself, are bound to prove successful means of instruction.

PUBLICITY AND PROGRESS

Passing reference is made to THE AGRICULTURAL GAZETTE, and to the general work of the Publications' Branch in the circulation of bulletins, pamphlets, etc., and a list given of the officials of the provincial departments of agriculture who attended the first conference on the

invitation of the Federal Minister, held at Ottawa on March 24 and 25, 1914. The Report gives a list of no fewer than 155 provincial instructors whose offices have been created, and whose salaries and expenses have been provided through this Act. Expenditure for educational buildings as particularized amounted to \$226,910.76.

APPENDIX AND ILLUSTRATIONS

Sections 2 to 12 of the Report go into further and exact detail of the work that was done by the different provinces by the aid of grants under THE AGRICULTURAL INSTRUCTION ACT the first year of its operation. Section 13 is devoted to an Appendix, in which are given articles from farm papers referring to work done under the Act; to the course of agricultural instruction in Belgium prior to the war; to educational competitions for girls and boys on the farm; to the advantages derived by agricultural education from consolidation, by Prof. S. B. McCready, B.S.A.; on Consolidated Schools by J. J. Tilley, ex-Inspector of Model Schools for Ontario; on Consolidation and Agriculture, by Richard Lees, M.A., Public School Inspector, Toronto, and on United States appropriations for agricultural instruction, the whole concluding with a series of plates of buildings erected by means of the Act, with diagrams of plans of the different structures. These buildings include the new Poultry Building at the Ontario Agricultural College, the new Field Husbandry Building, also at the Ontario Agricultural College, a large addition to the main building of the Nova Scotia Agricultural College, the Horticultural Building and Greenhouses, also at the Nova Scotia Agricultural College, the School of Agriculture in Alberta and the recently opened Agricultural Institute at Sussex, N.B. A picture and plans are also given of the Fisher Vocational School at Woodstock, N.B.

THE AGRICULTURAL ECONOMIC COMMISSION

The following is a certified copy of a Report of the Committee of the Privy Council, approved by His Royal Highness the Governor-General on the 28th June, 1915.

THE Committee of the Privy Council have had before them a report, dated 26th June, 1915, from the Right Honourable the Prime Minister, stating that he has had under consideration the desirability of appointing a Commission for the purpose of making careful and exhaustive inquiry into the matters hereinafter mentioned.

The Prime Minister observes that the need is everywhere recognized of stimulating greater production in Canada, and especially agricultural production, the immense importance of which has been emphasized by reasons of conditions arising out of the war.

That in connection with opportunities for increased agricultural production it is necessary to bear in mind the importance of:—

- (a) Improved methods of production with a view to a better return to the producer;
- (b) Assisting this purpose by proper instruction and demonstration;
- (c) Increasing the acreage under production;
- (d) Attracting immigration of a type which would aid in ensuring a large and permanent agricultural population;
- (e) Stimulating and encouraging co-operation among the producers; and,
- (f) Providing cold storage and abattoir facilities.

The Prime Minister further observes that the agricultural production of Canada is of a highly diversified character and is spread over a great territory comprising an enormous area of fertile land of which only a small percentage is at present tilled.

The conditions of soil, climate and situa-

tion are so varied as to emphasize the necessity of pursuing methods of cultivation and purposes of production which are especially suited to any particular locality under consideration.

The great area of territory embraced within the Dominion creates unusual problems which affect:

- (a) Distribution of products in our home markets and the trade thus created between the several provinces and their various communities;
- (b) The transport of products to our national ports from which they shall eventually reach their destination abroad; and,
- (c) Their transport to the market of destination abroad.

The Prime Minister states that so far as is compatible with conditions herein mentioned it is manifestly in the public interest that before export the product should be converted through manufacture in Canada into the form in which it is proposed to be consumed or used; thus encouraging and stimulating those industries subsidiary to agriculture which can be carried on successfully in the Dominion.

Important questions as to the marketing of our food products, including consideration of the time at which and the methods by which this is accomplished, should receive careful attention. The value of co-operative efforts among the producers, and the importance of reducing the present great discrepancy between the price received by the producer and that paid by the consumer, should not be overlooked.

It has been represented to the Government that large numbers of persons who before emigrating to Canada had been engaged in agricultural pursuits, have not settled upon the land in Canada, but have been attracted by the opportunities for obtaining high wages in cities and towns and in the construction of railways and other works. The opportunities for thus obtaining work have recently become considerably restricted and this result has brought about a greater degree of unemployment than usually prevails. It

further appears that very large areas of land for which homesteaders have secured patents are not under cultivation and it is considered that the causes which have led to these results are a proper subject for thorough inquiry.

In connection with the subjects above alluded to, consideration should be given to the conditions which will arise upon the conclusion of the present war and to the resulting opportunities for a vigorous and effective policy of immigration which should have as its object the purpose of attracting to our shores immigration of a suitable type, and of inducing the settlement of an agricultural population upon the fertile uncultivated lands which are abundant both in Western and in Eastern Canada. In this connection inquiry should be made as to the means by which and the lines upon which the Federal Government, whether upon its own sole initiative or in co-operation with provincial governments can best carry out an effective scheme of colonization.

The return to Canada, after the conclusion of the war, of the Canadian troops now gallantly fighting beyond the seas for our Empire, and the probable immigration into Canada of other British soldiers and of men from the allied armies, after peace shall have been established, should also engage the attention of the proposed Commission in order that every reasonable opportunity through the assistance and co-operation of the federal and provincial governments may be afforded to those who may seek employment.

The Prime Minister further observes that the question of transportation, whether by land or water carriage, is for reasons above indicated closely connected with the problems under consideration. With this should be considered the advantages which would undoubtedly be derived from permanent improvement of highways which are in truth an important part of our transportation system.

The approaching completion of two additional transcontinental railways is a very important element in our transportation problem. It has been represented to the Government that their construction has considerably anticipated the present capacity of the Dominion to provide traffic for trunk lines; while on the other hand important portions of newly settled territory are without the facilities which would be afforded by branch lines incident to a

more carefully considered system of railway development. The condition thus created invites the careful attention of the Commission.

As Canada has been and will be for many years a borrowing country requiring capital for extending and developing its agricultural and manufacturing industries, and as the securing of capital at reasonable rates of interest is essential for increased production and continued progress, this subject should also be taken into consideration. It is to be observed that no proposal which would deter capital from seeking investment in this country, or which would unfairly affect that already invested under established conditions, would in the final result assist Canadian producers in any branch of industry.

It seems reasonable that under the conditions which have developed during the past six months opportunities will arise for widening and extending our markets to the advantage not only of Canada but of the countries and communities with which trade may thus be created or extended. The steps already taken by the government for that purpose should be brought to the attention of the Commission and their consideration invited.

The Prime Minister having taken into account the foregoing considerations, as well as the representations which have been made to the Government upon the various matters aforesaid, recommends that a Commission be appointed forthwith to consider, inquire into and report upon the same and kindred subjects which may seem to them directly connected therewith.

The Prime Minister further recommends that such Commission be appointed under the provisions of Part I of the Inquiries Act, Chapter 104 of the Revised Statutes of Canada, and that the Commission be authorized to employ such scientific and professional assistance as its members may determine.

That the duration of the Commission shall be during pleasure.

That the Commission may make interim reports, from time to time, as they shall determine.

The Committee concur in the foregoing and submit the same for approval.

(Sgd.) F. K. BENNETTS,
Asst. Clerk of the Privy Council.

**Certified copy of a Report of the Committee of the Privy Council, approved
by His Royal Highness the Governor-General on the 19th
October, 1915.**

The Committee of the Privy Council have had before them a report, dated the 14th October, 1915, from the Right Honourable the Prime Minister, referring to the Order in Council approved on the 28th day of June, 1915, which authorized the appointment of a Commission for the purpose of making careful and exhaustive enquiry into the matters therein mentioned.

The Prime Minister observes that the selection and the personnel of the Commission has been delayed owing to his absence in Great Britain during the summer and to other matters which have necessarily occasioned the delay that has intervened.

The Prime Minister recommends that the following gentlemen shall constitute the Commission:—

Honourable James A. Lougheed, P.C.,
Chairman;

Joseph Wesley Flavelle, city of Toronto;

William Farrell, city of Victoria;

S. Jean Baptiste Rolland, city of Montreal;

Edward N. Hopkins, city of Moose Jaw,
Sask.;

Honourable William Benjamin Ross, of
Middleton, N.S.;

Dr. John Gunion Rutherford, city of
Calgary, Alta.;

William Smith, Esq., M.P., Columbus,
Ont.;

James Cameron Waters, city of Ottawa.

The Prime Minister further recommends that William John Black, of the city of Winnipeg, be secretary of the said Commission.

The Prime Minister further recommends that the Commission be authorized to delegate to a sub-committee of its members the enquiry into one or more of the questions upon which the Committee is authorized to report; and that the proceedings of any such sub-committee and its report upon any such question shall be submitted to, and considered by, the Commission, which may approve, modify, disapprove, refer back, or otherwise deal with any such report.

The Committee concur in the foregoing recommendations and submit the same for approval.

(Sgd.) F. K. BENNETTS,
Asst. Clerk of the Privy Council.

CONTAGIOUS DISEASES ACT AMENDED

The Order under "The Animal Contagious Diseases Act," of date the 9th day of September, 1915, is hereby amended by adding thereto the following paragraph:—

"(33) The transit through Canada of carload shipments of United States dressed hogs, for export by sea, is permitted in bonded sealed cars, provided the steps and running-boards of such cars are disinfected at the port of entry to the satisfaction of an inspector of the Department of Agriculture, and that the cars are disinfected immediately after unloading, under the supervision of an inspector of the Department."

Dated at Ottawa this twenty-eight day of October, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

GOVERNMENT PUBLICATIONS AND THEIR DISTRIBUTION

THE PUBLICATIONS BRANCH

THERE were distributed by the Publications Branch, during the past fiscal year, one million, eight hundred and six thousand, four hundred and fifty-four copies of publications. This was more than seven hundred thousand copies in excess of the number issued during the previous year. From the increase in the mailing lists and the number of new publications, together with the requests by mail for literature, it is estimated that the distribution for the present fiscal year will exceed that for last year by fifty per cent. The literature issued last year included sixty-seven new publications of this Department and small editions of six bulletins issued by the International Agricultural Institute at Rome. The departmental publications included nine reports, thirteen bulletins, nine pamphlets and three leaflets, besides The Agricultural War-Book and the monthly issues of THE AGRICULTURAL GAZETTE and The Bulletin of Foreign Agricultural Intelligence.

PUBLICATIONS BRANCH ORGANIZED

Four years ago the Publications Branch was organized. Up to that

time the respective Branches maintained their own mailing lists and distributed their publications. As there existed no co-operation among the Branches in respect to this work, the method of handling publications was not uniform. The addressing of envelopes, except in the Experimental Farms Branch, was done by hand. The Experimental Farms followed the system used by many of the newspapers, in having the addresses printed on tabs which were pasted to the envelopes. With the organization of the Publications Branch the respective mailing lists were taken over and each was classified alphabetically within post offices, within constituencies and within provinces. When the classification was complete the addresses were placed on metal stencils operated by machinery. They were also maintained on index cards.

Up to this time the lists were Branch, rather than subject lists. That is to say, the Seed list, the Live Stock list, the Experimental Farms' list, etc., were individual units, with the result that a farmer, whose name was on the Seed list, received only the publications of the Seed Branch and did not receive,

unless he happened to be on the Experimental Farms' list, the publications dealing with a corresponding subject issued by the Experimental Farms. The same was true of names on the Live Stock list with respect to live stock publications issued from the Farm.

SUBJECT MAILING LISTS

With a view to correcting this a carefully planned scheme was worked out whereby the Live Stock, the Seed, the Dairy and corresponding Branch subject lists would form the basis for departmental subject lists, and to these would be added the names of farmers who were on the Experimental Farms' list and were interested in the above respective subjects. The Experimental Farms' list, therefore, had to be re-classified according to subjects. To do this a post card was sent to each of the names on the Farms' list, asking the recipient to indicate on the return portion the list or lists he preferred to be on. As the replies were received the names were transferred from the Experimental Farms' list to the respective subject lists.

This plan possessed the weakness of the duplication of certain names on the several lists, which was a serious matter, because it is occasionally desirable to send a certain publication to each of several lists, as for example, publications of the Experimental Farms dealing with several subjects. To meet this a re-classification of the whole mailing list had to be undertaken and when complete, will provide the following requirements:

- (1) Filing an index card bearing the name and address of each applicant, together with a record of the list or lists on which his name appears.
- (2) Filing the address stencils in such a way that to each applicant is sent, as issued, all publications on the special subject or subjects in which he is interested.
- (3) The general distribution of publications so that not more than a single copy is sent to any one address.

- (4) The addition of practically an unlimited number of names without changing or altering the system and without lessening efficiency.
- (5) The possibility of ascertaining at any time, the number of names on any special list or the whole of the mailing list, thus indicating the number of copies of any publication required to be printed.

These requirements involved the organization of seven subject lists and one unspecified list, in addition to certain special lists, as THE AGRICULTURAL GAZETTE, Bulletin of Foreign Agricultural Intelligence, etc. The subject lists used are known by the numbers 1 to 7, an extra list, No. 8, being left for future extension. The lists are:

- | | |
|------------------------|------------|
| 1. Seed or Field Crops | 5. Fruit |
| 2. Live Stock | 6. Bees |
| 3. Dairy | 7. Tobacco |
| 4. Poultry | 8. Vacant |

COMBINATION SUB-SECTIONS

In order to simplify the work as much as possible the lists are divided into three sections and each section is divided into fifteen sub-sections, or combinations for each province. The stencils in each sub-section are numbered from one upwards. The sections are known as No. 1, No. 2 and Z, and are made up as follows:

Section 1				Section 2			
1	1-2	2-4	1-3-4	5	5-6	6-8	5-6-7
2	1-3	3-4	2-3-4	6	5-7	7-8	6-7-8
3	1-4	1-2-3	1-2-3-4	7	5-8	5-6-7	5-6-7-8
4	2-3	1-2-4		8	6-7	5-6-8	
Section Z							
Z-5	Z-5-6	Z-6-8	Z-5-7-8				
Z-6	Z-5-7	Z-7-8	Z-6-7-8				
Z-7	Z-5-8	Z-5-6-7	Z-5-6-7-8				
Z-8	Z-6-7	Z-5-6-8					

From this it will be seen that Section No. 1 contains all the combinations of 1, 2, 3, and 4, Field Crops, Live Stock, Dairy and Poultry and that Sections No. 2 and Z, except for the prefix Z, are the same and contain all the combinations of 5, 6 and 7—Fruit, Bees, Tobacco, and No. 8 which is not used at present. Occasionally bulletins for general distribution are issued, that

is, bulletins treating on more than one subject, which have to be sent to all the names on the lists. As Sections 1 and 2 are used for this purpose it is essential, in order to avoid duplication, that each name appear but once on these sections, but frequently a person is interested in subjects in both sections. To provide for this, Z Section is used in conjunction with Section 1, that is, should a person desire to receive bulletins on subjects contained in both sections the name is first placed in the combination in Section 1, and then in the combination in Section Z. For example, A and B are to be put on the lists A to receive publications on Field Crops and Dairy (1-3), and B to receive publications on Field Crops, Dairy and Fruit, (1-3-5). Their names would first be placed on combination (1-3) in Section 1. But B also desires publications on fruit, and since the same name must appear only once in Sections 1 and 2, the second stencil for B is placed in combination Z-5 in Section Z. It will be understood from this that for every stencil in Section Z a duplicate must appear in Section 1 and further, that Section Z is addressed only in conjunction with Section 2, because since no name appears in Section 2 which is contained in Section Z, it follows that if a bulletin is issued for, say, fruit, which is No. 5, all the combinations of 5 in Section 2, and all the combinations of Z-5 in Section Z would be addressed. A corresponding system of combinations is used for the French lists.

METHOD OF OPERATION

In order to make clear the system,

LIST	NO.	LIST	NO.
1....	6,198	2-4.....	946
2....	10,151	3-4.....	720
3....	389	1-2-3.....	1,333
4....	5,604	1-2-4.....	3,505
1-2....	2,386	1-3-4.....	575
1-3.....	366	2-3-4.....	788
1-4.....	1,087	1-2-3-4....	24,975
2-3.....	308	5.....	522

the method of dealing with applications is further explained.

EXAMPLE OF CLASSIFICATION

<i>Applicant</i>	<i>Publications Desired</i>	<i>Where Entered</i>
Mr. Brown	Poultry	Sub-Section 4
Mr. Jones	Live Stock	
	Poultry	Sub-Section 2-4
Mr. Smith	Field Crops	
	Live Stock	Sub-Section 1-2-3
	Dairying	
Mr. Blue	Live Stock	Sub-Section 2-3-4
	Dairying	Section Z Sub-
	Poultry	Section 5. (Z-5)
	Fruits	

Publications on special subjects are mailed to all names in drawers where occurs the figure representing that subject: *e. g.*:

Poultry—(Figure 4, poultry) To names in Trays 4, 1-4, 2-4, 3-4, 1-2-4, 1-3-4, 2-3-4, 1-2-3-4

The application of Mr. Blue for publications on fruits is placed in Z-5 because his name is once entered in Section 1 under sub-section 2-3-4 among those to whom are mailed publications on live stock, dairying and poultry or for general distribution.

When a publication is issued for general distribution all the address stencils in Sections 1 and 2 are used, but not those in Section Z, for, as explained above, the names in this section have already been addressed in Section 1.

The total number of individual names at present on the mailing lists is 170,918 English and 36,894 French. Of these 83,116 English and 7,737 French are filed under the system outlined above, the remainder are being transferred as rapidly as possible. The English names are divided on the combinations as follows:

LIST	NO.	LIST	NO.
6.....	49	Z-7.....	130
7.....	3,810	Z-5-6....	1,294
5-6.....	76	Z-5-7.....	295
5-7.....	11	Z-6-7.....	16
6-7.....	10	Z-5-6-7....	366
5-6-7.....	8		
Z-5.....	15,838		
Z-6.....	359		

It will be observed that all combinations of (8) have been omitted. As already explained, this number has been left to accommodate any list which may be organized in the future.

The great advantage of this system is easily seen by an analysis of the foregoing figures. While the total number of names or stencils is 83,116, there are in actual use, with the aid of the combinations, 180,820 stencils, making a saving of 97,705 stencils which would have to be used if the lists were filed separately.

A CARD NOTATION SYSTEM

Before a new bulletin is printed.



FIG. 1—PROVINCIAL COLOURED GUIDE CARD FOR ONTARIO

Corresponding guide cards are used for the other provinces

it is necessary to ascertain the number of copies that will be required for the particular list affected, and to provide the necessary surplus. For this purpose a system of card notation has been devised. With this system guide cards are used which bear the name of the province (See Fig. 1). Back of each provincial guide card are placed forty-five notation cards, one for each combination or sub-section. This card is marked off in squares

(See Fig. 2). The last number of each combination is marked in the first square (A. Fig. 2), and when new names are added the new total is marked in the next square (B. Fig. 2) and so on. By this method the totals are always ready for quick reference. This index has another use. When "Uncalled For" mail is returned the addresses are removed from the lists, leaving vacant numbers. These vacant numbers are filed back of the combination guide cards and new names to go on the list receive them.

If it is required to learn the total number of names on any particular list, there are added the last total on each of the guide cards bearing the number which represents the list in question. For example, if it is necessary to find the total number of names on List 1, which is Field Crops, the totals of all the combinations in Section 1 which contain the Figure 1, are added.

THE CARD INDEX

As explained above, the addresses on the mailing lists are maintained on numbered metal stencils. From these the envelopes

ONTARIO 1.2.3									
A	515								
B	520								

FIG. 2—SUB-DIVISION GUIDE CARD FOR 1.2.3—FIELD CROPS, LIVE STOCK AND DAIRY—ONTARIO

Forty-five of these guide cards are used for each province—one for each combination. The number 520 indicates the number of names on the combination list 1 2 3 for Ontario. It also shows that five names have been added to the former total of 515.

are addressed by electrically driven machinery. But there is also maintained a card index system. The cards (See Fig. 3) are classified alphabetically within post offices, and within provinces. They are printed from

E. ROCH, 124-1496
R. R. 1, BRUNNER, ONT

Z5	8899

FIG. 3.—This index card shows that E. Roch receives all publications on field crops, live stock, poultry and fruit and that he bears the number 1396 in the 1 2 4 combination in Ontario and the number 8899 in the Z5 combination in Ontario.

the stencils, and show the combination in which the name appears. When a name appears in the Z Section also, the section and number of stencil is typewritten in squares at the end of the card, as shown in Fig. 3.

EXTENSION OF MAILING LISTS

In the announcing of new publications and in spreading agricultural information, the co-operation of the press is obtained. Reading notices, with duplicate copies of new bulletins and reports, are issued to the agricultural papers and newspapers of the country. The publication of these notices usually brings many requests for the bulletins or report reviewed. With these is sent to each applicant a return post card inviting him to state in reply to which list he wishes his name attached. When the card is returned the name is added. This is but one of several means of securing new names for the lists, but in no case are names added unless requested. During the present year blank application forms have been placed, by courtesy of the Post

Office Department, in rural mail boxes. Opportunity was afforded visitors at rural fairs to fill in application forms. From these two methods many thousands of new names are being added to the permanent lists. As new names are received they are added to the respective lists, according to the expressed desire of the applicants. As publications are returned "Uncalled For" the names are removed from the lists.

PUBLICITY

Last winter a campaign of publicity was carried out in connection with the "Patriotism and Production" movement. There were inserted in daily and weekly newspapers, covering the country from coast to coast, a series of nine boldly displayed and appropriately worded advertisements. Fac similes of these appeared in the April, 1915, number of THE AGRICULTURAL GAZETTE. Each advertisement made a specialty of some branch of agriculture. A space in each advertisement was occupied by a coupon inviting application for bulletins on specified subjects. At the same time the newspapers were supplied with articles of information prepared to enlighten farmers on the agricultural situation and approved methods of culture. As a result of this work upwards of one hundred thousand publications were sent out on request.

Lists of available publications are printed in pamphlet form for distribution. This list appeared in THE AGRICULTURAL GAZETTE for April, 1914. Notices of publications issued since that date have appeared in this publication from month to month.

THE DOMINION EXPERIMENTAL FARMS

BY J. F. WATSON, CHIEF, EXTENSION AND PUBLICITY DIVISION

EVERY year since the inception of the Dominion Experimental Farms in 1886, the Director and Chief Officers have taken advantage of every opportunity to place before the farmers of Canada the results of their investigations and experiments, to offer suggestions and advice, and in every way possible to help the agriculturist to solve his daily problems.

By lectures and addresses at agricultural meetings, by assisting at short courses and field demon-

strations, and by correspondence, in the course of every year many thousands of farmers throughout the Dominion receive practically personal, individual advice and instruction from the officials of the Experimental Farm and Stations.

What might be termed impersonal instruction is given through the Agricultural Press and in publications issued by the Dominion Experimental Farms. These channels of publicity may be tabulated as follows:

PUBLICATION	AUTHOR	HOW DISTRIBUTED
Annual Report	Director and Chief Officers of the Central Experimental Farm and Superintendents of Branch Farms and Stations.	By Publications Branch.
Bulletins	Ditto	Ditto
Circulars	Ditto	Ditto
Pamphlets	Ditto	Ditto
"Seasonable Hints" (Published in March, July and November)	Director and Chief Officers of Central Experimental Farm.	Ditto
Exhibition Circulars (Limited to 4 pages each)	Chief Officers of C. E. F. and Supts. of Branch Farms and Stations.	At Exhibitions and Fairs and to correspondents on application.
Articles in the Agricultural Press	Ditto	
Circular Letters	Publicity Division	By mail to Rural Route patrons, members of Agricultural Societies and similar organizations.

Besides these efforts, an organized plan is followed of exhibiting at a large number of Exhibitions and

Fairs in every Province of the Dominion.

THE FRUIT BRANCH

BY D. JOHNSON, COMMISSIONER

AS a branch this part of the Department of Agriculture has been in existence only since May, 1914, and up to the present no bulletins have been issued, the only publication of any importance being the Report of the Fourth Dominion Conference of Fruit Growers, held at Grimsby in September, 1914. During 1912 and 1913 the

Fruit Division, then part of the Dairy and Cold Storage Commissioner's Branch, issued two bulletins, "Modern Methods of Packing Apples and Pears" and "Co-operation and Fruit-Growing", which are still being distributed to the fruit growers and associations of the various Provinces. Many requests are received at this office asking for information

which is fully covered by these bulletins.

This Branch has been devoting considerable attention to the publication of monthly crop reports, of which some fifteen thousand are sent out, nine thousand through the Publications Branch and six thousand direct from this office, each month during the fruit season, advising the public as to the condition of the fruit crop in the various fruit producing districts of the Dominion. This report varies from 8 to 12 pages and contains information also with respect to foreign conditions, the object being to keep those interested in the production and marketing of fruit as closely in touch with the production of the various kinds as possible. The information is gathered from several hundred fruit growers who are known to be thoroughly posted as to conditions in their respective districts, and reports are also received from the different Government Experiment Stations, Fruit Growers' Associations, from our own inspectors in Canada, and from Canadian officials in foreign countries.

Commencing the middle of August the Branch issues, twice a week, a telegraphic fruit and market report, advising the public as to the development of the fruit, the probable yield in different districts, the prices being paid at shipping points and also the prices paid in the principal markets in which Canadian fruit is sold. This information is secured by night lettergrams from well known growers and dealers, fruit growers' associations and from our own sixty-five fruit inspectors scattered over the Dominion. Cablegrams are also received, from time to time, from the British markets. The reports are issued on Tuesday and Friday of each week, and are mailed to all the large growers and associations in Canada. In addition they are given to the Associated Press so that the report appears in a

great many of our daily and weekly papers. The report has proved very popular with those interested and letters of appreciation are being constantly received.

Canada this season produced a large quantity of peaches and plums, and it looked in the early part of the season as if there would be little market for this fruit, as it is considered by many as a luxury and not a necessity of diet; and it was freely predicted that prices would run very little above the cost of production. This kind of fruit was, perhaps, more seriously affected by the financial stringency caused by the war, than any other as owing to its perishable nature, it had to be marketed quickly. In view of this fact the Fruit Branch undertook an advertising campaign in practically every weekly and daily paper in Canada, extending over a period of seven weeks. As the peaches and plums began to ripen, the public was kept advised by "write-ups" in the papers what varieties were likely to be on the market, how the fruit was developing, and attention was also drawn to the desirability of having a supply of preserved peaches and plums for winter use, both as a luxury and as a health diet. When the packing season commenced these articles were reinforced by 300-line display ads, telling the public that peaches and plums were then on the market and suggesting that now was the time to buy from their dealers, who were stocked up with fruit, and ready to supply their demands. In addition to this, announcements were placed in the weekly papers, in island spacing, noting when the various varieties of peaches and plums were ripe. When advising that housewives should look after a supply of canned and preserved fruit for their own use, it was suggested that they should also put up a quantity for distribution, through their local Red Cross Association, to our Overseas soldiers.

We have reason to believe that this campaign greatly increased the consumption of peaches and plums. Last year, with a crop of about 15 per cent of this year's, it was found

that these fruits were very hard to sell, and the prices realized were not much better than the prices obtained this season under the same war conditions.

THE SEED BRANCH

PUBLICITY in the Seed Branch, aside from the delivering of addresses, is carried on by means of reports, bulletins, special contributions, leaflets, press articles, and correspondence. Publications for the Branch, year ending August 31st, 1915, include a contribution to the Annual Report of the Minister of Agriculture, the Report of the Seed Commissioner, bulletin S-8- Weeds and Weed Seeds, bulletin S-9. An inquiry into the Cereal Grains, Flax and Corn used for Seed in Canada, a bulletin on Grain Screenings compiled in conjunction with officers of the Experimental Farms' Branch. These publications and the articles contributed to THE AGRICULTURAL GAZETTE are distributed through the Publications Branch. Special contributions, chiefly statistical, are also

contributed to the *Census and Statistics Monthly*, issued by the Trade and Commerce Department.

Leaflets on seed testing for purity and germination are enclosed with the reports issued to farmers and seed merchants on the grading and germination of their seed. In some cases circulars on methods of cleaning the seed are included. Special information is given by correspondence.

Unusual conditions brought about by the war led to the issuing of short articles giving prompt information to farmers, gardeners, and seed merchants through the press and agricultural papers. Some forty of these articles relating to seed supply and production have been sent out during the past year.

THE LIVE STOCK BRANCH

THE SHEEP DIVISION

PAMPHLETS of the Sheep Division, Live Stock Branch, are distributed through several agencies besides the regular channels provided by the Publications Branch. Many requests for literature of this nature were received from the secretaries of associations, obtaining the loan from this Branch of pure bred rams. Now to every member of these societies is mailed copies regularly. Besides, in like manner, members of Wool

Growers' Associations receive copies from this office of all pamphlets issued. In connection with the wool and sheep husbandry exhibit which has already been presented at most of the prominent fairs in Canada, and in a Demonstration Railway car through the Eastern Provinces, copies of this literature are given to all visitors expressing a desire for them. In this fashion over 300,000 copies of pamphlets were distributed in 1914.

THE POULTRY DIVISION

THE peculiar nature of the work undertaken by the Poultry Division of the Live Stock Branch during the past three years necessitated a slight departure from the usual system of distributing departmental publications. In this instance a definite campaign for Egg Trade Improvement had been instituted and a special series of pamphlets and leaflets prepared with this end in view.

A preliminary investigation had shown that, while the wholesale dealers themselves were not directly responsible for the loss and deterioration apparent, they had at their disposal the most effective means of improvement, namely, the adoption of a system of quality payment in the purchase of their eggs.

No satisfactory mailing lists being available a circular letter together with copies of the publications was sent to all dealers and they were asked in addition to actually adopting the recommendations themselves to either undertake the distribution of a certain amount of literature or to send in a list of their shippers and buyers on the understanding that the information would be mailed direct. In this way a list of some twenty thousand egg shippers and country merchants was obtained. Each of these in turn was circularized, sent copies of the literature and candling appliances and asked either

to undertake the distribution of a further supply to his customers direct, or else to forward a list of their names to Ottawa. Several thousand names of producers were thus secured, but the majority of the country merchants replying preferred to have a quantity sent to them in order that it might be placed on their counter or handed with a word of explanation to those customers that needed it most.

The producers and the trade were reached in this way. It was more difficult to get into touch with and interest the consumer. This was done by putting on egg candling demonstrations at all large exhibitions throughout the Dominion and by means of articles and illustrations in the press. The simple methods by which the quality of an egg may be determined without breaking the shell were pointed out and customers urged to ask for and make daily use of the cardboard candling appliances supplied free by the department.

That the efforts put forth in this direction have been successful is amply demonstrated by the marked improvement in quality that has taken place. It is proposed to supplement the work to date by a comprehensive campaign both at home and abroad that will not only nationalize but adequately advertise the best grades of Canadian eggs.

POULTRY MARKETING CALENDAR

MONTH	STOCK TO MARKET	REMARKS
MAY	FIRST EARLY BROILERS. SOME ROOSTERS SOME HENS. FIRST GREEN DUCKS.	Poultry should be marketed over a longer period. Too much congestion occurs in the fall of the year. The culling out of inferior birds should be more frequently undertaken. During the last of May and first of June, the first systematic culling of old hens should take place. See Pamphlet No. 10, Poultry Division, Live Stock Branch, "The Marketing of Poultry."
JUNE	ALL ROOSTERS. OLD HENS. EARLY BROILERS GREEN DUCKS.	First week in June (Rooster Week). Kill off, dispose of or remove from the flock, the male birds after the breeding season. Their presence in the flock after this date causes a loss of a million dollars a year to Canadian farmers through the sale of partially incubated and bad eggs in the produce which is marketed
JULY	OLD HENS. BROILERS GREEN DUCKS. OLD DUCKS.	The culling of non-layers should be continued throughout July. The season of high production is over and at the high price of feed it does not pay to keep hens as boarders throughout the summer
AUGUST	BROILERS. OLD HENS GREEN DUCKS. OLD DUCKS. GREEN GEESSE.	All surplus Leghorn cockerels and cockerels of other light weight breeds should be marketed as broilers. They are of little value as roasters. Green ducks are young ducks from 8 to 12 weeks old. They should be sold before they moult
SEPTEMBER	OLD HENS BROILERS SMALL ROASTERS. GREEN DUCKS. GREEN GEESSE.	During last of August and first of September the second systematic culling of old hens should take place. All old hens intended for market should be sold before they moult.
OCTOBER	ROASTERS (CRATE FED) LAST OLD HENS ROASTING YOUNG DUCKS. OLD GEESSE OLD TURKEYS.	If not commenced previously, crate fattening should be started in October, and all cockerels and pullets intended for sale carefully and systematically fattened
NOVEMBER	ROASTERS (CRATE FED). YOUNG DUCKS. YOUNG GEESSE. SOME YOUNG TURKEYS.	By systematic fattening is meant the periodic selection of those birds which are most mature and the apportionment of the fattening periods to meet the market requirements.
DECEMBER	ROASTERS (CRATE FED). YOUNG DUCKS. YOUNG GEESSE. YOUNG TURKEYS.	While the demand for first quality poultry is unquestionably keen during December, it is not such as to warrant all producers selling all the poultry they have for sale. Almost invariably the months of January, February and March offer much more lucrative prices.
JANUARY	CRATE FED ROASTERS IMMATURE PULLETS LAST YOUNG DUCKS. YOUNG GEESSE. YOUNG TURKEYS.	Market prices are considerably higher as a rule than before Christmas. Fresh killed chickens, especially crate fed roasters, in special demand. Good market also for late hatched and immature pullets.
FEBRUARY	FAT HENS. FAT PULLETS LAST YOUNG TURKEYS.	Market prices high. It pays to hold over some stock for sale at this time.
MARCH	CULL BREEDING STOCK. SURPLUS MALES. CAPONS.	Prices very high. All surplus stock should be marketed. Capons do not become hard and staggy like cockerels.
APRIL	CAPONS.	Good prices available. Not wise, however, to sell much female stock during season of high production.

This Poultry Marketing Calendar, prepared by the Poultry Division of the Live Stock Branch, is published as a sample of the educational placards being distributed in connection with the poultry educational propaganda. A similar placard was distributed outlining the "Standards for Canadian Eggs" which were published in The Agricultural Gazette for March, 1915, page 226.

THE DOMINION EXPERIMENTAL FARMS

SUCCESSFUL GRAINS OF CANADIAN ORIGIN

COMPILED FROM OFFICIAL REPORTS

IN the cultivation of crops the three most important things to be considered are the soil, the climate and the character and quality of the seed. In Canada, we have nearly every variety of the first two, and a great many different sorts of the third. Latterly, there has been much more attention paid to all three than was the case formerly, thanks largely to the fact that individual efforts have found more and more encouragement. Until the second half of the last century, agriculturists had to rely entirely upon the knowledge they themselves obtained by experience, or by that father had endeavoured to hand down to son.

Somewhere around the middle of the century there came an awakening. The population of the world was increasing at a greater ratio than production. In the older countries unbroken soil was becoming a rarity, and long-tilled soil was being exhausted. Competition for trade, in the meantime, was getting constantly keener. Governments aroused themselves to these facts, with the result that colleges were established and agriculture became an object of earnest study in many centres. Then experimental farms came into being and tests and demonstrations followed, with the result that farmers and their families today have not only their own fund of information, their own hard-earned experience to depend upon, but the knowledge acquired by diligent research, after studious and practical training, by thousands of others. It is not all "book-learning" that they are asked to profit by, but by

results of years spent in tests under both favourable and unfavourable conditions by men who are devoting their lives to agriculture, and by men who are specializing in the different branches.

SOME IMPORTANT VARIETIES

Recently the Dominion Cerealist in reply to a question stated that the most important varieties that have been produced on the Experimental Farms, either by cross-breeding or by selection alone, have been Marquis, Huron, Prelude and Early Red Fife wheats; Manchurian barley and Arthur peas. Other and new varieties are being grown but the tests, which extend over several seasons, have not as yet been completed. With the kinds specified it is the present purpose to deal, telling as far as possible the growth and history of each.

First as to Marquis wheat, which has proven exceptionally good for the prairie provinces of Manitoba, Saskatchewan and Alberta, and which for five years in succession has carried off the chief prizes at the land, soil and dry farming congresses held in different parts of the continent as follows:

1911—Land show at New York, first prize, Seager Wheeler, Rosthern, Sask., from seed supplied from the Central Experimental Farm, Ottawa.

1912—International Dry Farming congress at Lethbridge, Alta., first prize, H. Holmes, Raymond, Alta.

1913—International Dry Farming congress at Tulsa, Okla., first

prize and sweepstakes, Paul Gerlach, Allan, Sask.

1914—International Dry Farming congress at Wichita, Kansas., first prize and sweepstakes, Seager Wheeler, Rosthern, Sask.

1915—International Soil Products' Exposition at Denver, Colo., first prize and sweepstakes, Seager Wheeler, Rosthern, Sask.; second prize, J. S. Fields, Regina, Sask.; third prize, Howell Brothers, Montrose County, Colorado, with a bushel produced from Marquis wheat imported from Saskatchewan.

Other awards were won by Marquis wheat at each of the mentioned shows, but the quotation of the foregoing is sufficient to prove the excellence and hardiness of the variety, it being premised that all of the shows were open to the world without restriction or limit. Consequently the Canadian samples had to compete against strong rivals that possessed the advantages of home grounds, and for the most part lesser distances of travel. It might be mentioned that Messrs. J. & S. Howell, third to Mr. Wheeler, in 1915, won the prize this year with Marquis from seed imported from Saskatchewan for the best bushel of all wheats exhibited from Colorado, and also the blue ribbon in special Class A. 2. Mr. Fields of Regina, who took second prize this year, came from the United States ten years ago. His exhibit was taken from a 140-acre field of Marquis, sown on summer fallow, seeding operations covering a period from April 12th to 15th. The grain was cut between August 28th to 31st, and threshed September 17th to 21st. The field produced 8,000 bushels of wheat, averaging between 45 to 50 bushels per acre. The grain was not hand-picked, but threshed in the ordinary way and cleaned with modern machinery.

THE STORY OF MARQUIS WHEAT

In the report of the Dominion

Cerealist for 1912, a brief history of the origin and development of Marquis wheat is given. It is stated that among the crosses made by the Director of Experimental Farms and his assistants during the first few years after the Farms were established, several were effected between Red Fife and various early-maturing wheats from Europe and Asia. All the details in regard to the origin of Marquis are not available, but it is

one of the descendants of a cross between an early-ripening Indian wheat, Hard Red Calcutta (as female) and Red Fife (as male). The cross (as appears from unpublished notes) was made by Dr. A. P. Saunders, probably at the Experimental Farm at Agassiz, in the year 1892. The cross-bred seeds, or their progeny, were transferred to Ottawa, and Dr. C. E. Saunders, the present Dominion Cerealist, was appointed in 1903 to take charge of the work of cereal breeding. He

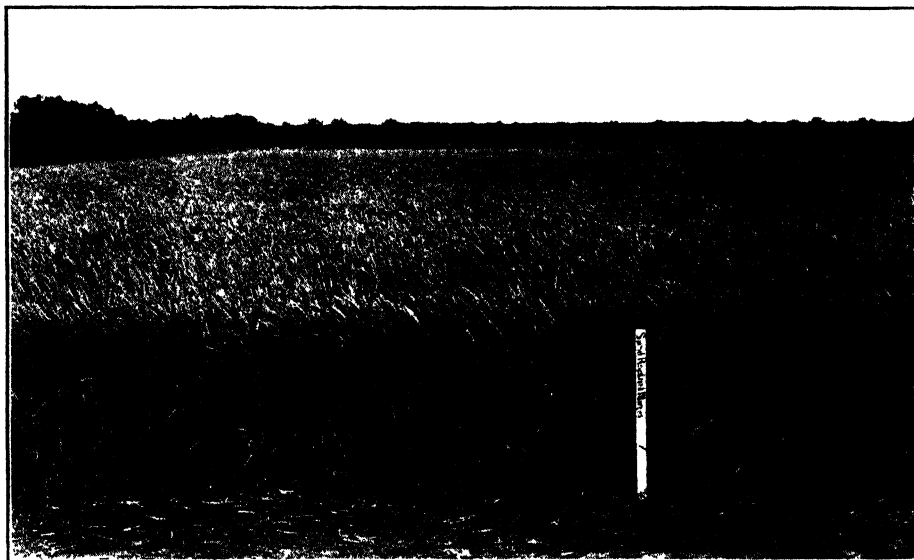


HEAD OF MARQUIS
WHEAT

made a series of selections from the progeny of all the cross-bred wheats which had been produced at Ottawa up to that time. Some of these had been named and others were under numbers. Though they had all been subjected to a certain amount of selection, each of them consisted of a mixture of related types. In some cases all the types present were similar. In other instances striking differences were observed. The grain which had descended from the cross herewith referred to was found by careful study of individual plants

(especially by applying the chewing test to ascertain the gluten strength and probable bread-making value) to be a mixture of similar-looking varieties which differed radically in regard to gluten quality. One of the varieties isolated from this mixture was subsequently named Marquis. Its high bread-making strength and colour of flour were demonstrated in the tests made at Ottawa in the early months of 1907, and all the surplus seed was at once sent to the Indian Head Experimental Farm for propagation.

the Cerealists' baking tests of 1907 were completed that it was decided to send out this wheat for trial in Saskatchewan. Its success in the prairie country was phenomenal. The year 1907 was quite unfavourable for most varieties owing to the prevalence of rust and of cool, wet weather. The early-ripening habit of Marquis and its power of resisting rust (to a certain extent) gave it an immense advantage. The result was that it headed the list of varieties in plots and fields alike. It yielded at the rate of 32 bushels per acre in the



FIELD OF SPECIAL REGISTERED MARQUIS WHEAT

BEGINNING OF POPULARITY

When Marquis wheat was originated can never be definitely stated. It came into existence, probably at Ottawa, between the years 1895 and 1902. It remained, however, mixed with other related sorts until discovered by Dr. Saunders in 1903. It was first grown in a pure state in 1904, when a few seeds were sown in a sheltered garden on the Central Experimental Farm. Even then, however, its fine qualities were only partly known, and it was not until

plots while Red Fife gave 12 bushels. In the fields it yielded at the rate of 42 bushels per acre and stood far ahead of any other sort.

Taking the average of the five years (1907-1911 inclusive) Marquis gave 50 per cent more crop than Red Fife on the uniform trial plots at Indian Head.

At Brandon in a test for four years (1908-1911 inclusive) Marquis yielded 10 per cent more than Red Fife.

In addition to its productiveness,

the chief points in favour of Marquis, for the provinces of Saskatchewan, Manitoba and Alberta, are its earliness in ripening (generally from 6 to 10 days earlier than Red Fife), strength of straw and comparative freedom from rust, heavy weight per bushel and fine appearance of the grain, and the excellent colour and baking strength of the flour produced from it.

All the previous records were surpassed at Rosthern in 1911 when a 1-40-acre plot of Marquis wheat at the Experimental Station yielded at the rate of 70 bushels per acre, and when Mr. Seager Wheeler obtained (from 5 lb. of seed produced at Ottawa the previous year), 250 lb. of wheat and two sheaves not threshed but estimated to contain at least 5 lb. of grain each. This extraordinary yield was obtained on a strip of land measuring 15 x 155 feet equal to about 1-19 of an acre. The crop from this plot furnished part of the seed with which Mr. Wheeler gained the highest award for spring wheat at the New York Land Show in 1911.

Marquis wheat is recommended as the best variety of wheat now available for Saskatchewan, and for many parts of Alberta and Manitoba.

In the eastern provinces and in British Columbia, Marquis has given excellent results, but has not won such a pre-eminent position as in the central provinces.

HURON WHEAT

Huron has not acquired the celebrity at home and abroad that Marquis has but still it is one of the most vigorous and productive of the early wheats known, and is recommended by the Dominion Cerealists for the Maritime Provinces and for Quebec and Ontario. Although good for bread-making, it is not equal in that respect to Marquis and Early Red Fife. For its vigour and productiveness it is however,

highly recommended. It is also suggested, with Early Red Fife, for test in Alberta if early-maturing varieties with longer straw than Marquis are essential. It is further doing well in British Columbia. As compared with Marquis it is equally early, produces a longer straw, gives about the same yield and produces a fine-looking hard red grain. Its popularity suffers to some extent on account of being bearded.

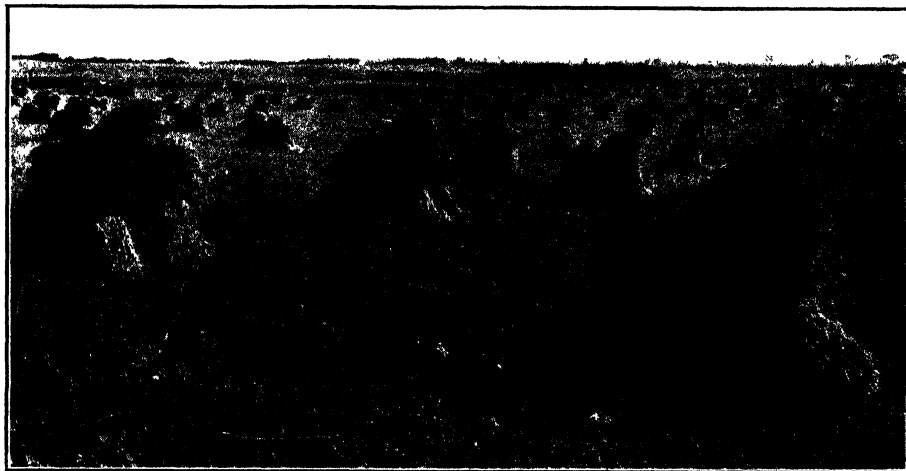
Huron is derived from a cross between Ladoga and White Fife.

PRELUDE WHEAT

In extreme northern districts of Quebec and Ontario, Prelude finds favour if the soil is fairly rich and the rainfall sufficient. It is also worthy of a trial in the Prairie Provinces wherever Marquis produces rather too long straw and ripens too late. In fact in all districts where the tendency is towards the production of excessively long straw and where a very early ripening wheat is required, Prelude is the best variety known. Tests at some of the branch Experimental Farms have clearly proven this. In 1912, a few small samples were sent to farmers in Saskatchewan and Alberta. Two cases can be quoted of the success achieved. Mr. E. B. Cay of Beatty (near Melfort) Sask., sowed five pounds of Prelude wheat on one-fifth of an acre and threshed 603 lb. Mr. W. J. Borton of Bottrel, Alta., sowed one pound of seed on a relatively large piece of land and secured 123 lb. of clean grain. Of course in the latter case, the wheat did not ripen so quickly as it would have done had it been sown more thickly. For dry districts, where the straw is apt to be short, Prelude cannot be recommended. Said the Dominion Cerealists in his report of 1913, "While the varieties of cereals under cultivation in some of the older settled portions of Manitoba and Saskatchewan are satisfactory, and the need of new and improved kinds is not now very

great, the condition of affairs is quite otherwise in northern districts and over a large portion of Alberta, where the early maturing varieties of wheat hitherto introduced cannot be depended upon to ripen every season, especially when sown on

cross between Alpha and Hard Red Calcutta. Alpha was a cross between Ladoga and White Fife. Prelude, therefore, traces its descent from four different varieties: White Fife, Ladoga, Hard Red Calcutta and Gehun.



PRELUDE IN STOOK—JACOMBE, ALBERTA

summer-fallowed land. For these conditions Prelude wheat will be of enormous value." It gives a good yield of extra hard, plump wheat and its flour is of the highest rank for baking strength, but has a slightly yellowish tinge. Complaints of the shelling out of Prelude when allowed to stand until quite ripe indicate the necessity of cutting before it reaches full maturity. This would make the average date of cutting in Alberta and Saskatchewan very early in August, or possibly sometimes even at the end of July. At Ottawa, it is usually ready to cut about ten days before the end of July. Some crosses between Prelude and other varieties have given rise to a quantity of interesting and promising material for selection within a year or two.

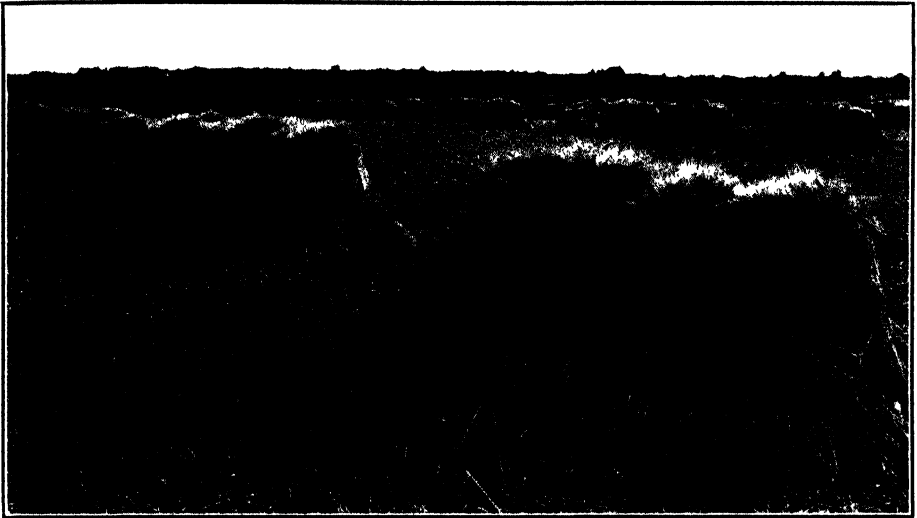
Prelude has a rather long pedigree. It is one of the offspring from a cross made between an extremely early-ripening variety, Gehun, and a cross-bred sort, Fraser. This latter was a

EARLY RED FIFE

As its name indicates Early Red Fife's prime virtue is its earliness. It is an offshoot from Red Fife, one of the standard varieties that has been used very largely for cross-breeding. Early Red Fife has proven the same in baking strength and in most other qualities as its progenitor. Its drawback is a greater tendency to rust than Marquis and Huron, the former of which it exceeds in length of straw, and than the latter of which it pro-



HEAD OF EARLY RED FIFE WHEAT



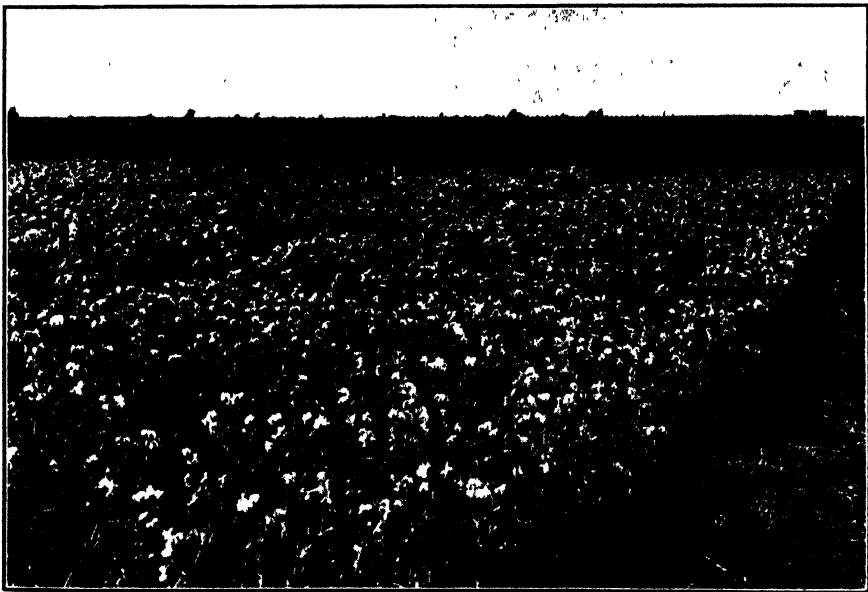
MANCHURIAN BARLEY AT INDIAN HEAD, SASKATCHEWAN

duces better flour. In rather dry districts where rust is not common, it has proven very useful. In Eastern Canada it has done well and is recommended for test in the drier parts of Saskatchewan and Alberta

where length of straw is the desideratum.

MANCHURIAN BARLEY

Several thousand strains of barley are being tested or have been tested



PEA PLOTS IRRIGATED—LETHBRIDGE, ALBERTA

"Arthur" is the principal one seen

at the Experimental Farms. Among the earliest and most productive is the Manchurian, a selected strain of Mensury. This selection has surpassed in yield both the original Mensury from which it was derived and the closely related Mandscheuri. These two have, therefore, been discontinued. Manchurian barley is very prolific, produces exceptionally long heads and has good straw.

ARTHUR PEAS

This is a selection of a pea produced many years ago at Ottawa by

cross-breeding. The peas are round, yellow and of medium or above medium size. The pods are borne chiefly at the tips of the plants. The straw is coarse. The pea is exceptionally productive and of early-maturing habit. It is recommended as probably the best variety of field pea, for nearly all sections of the country, now available to the public, for most conditions, and especially for earliness and yield.

Arthur comes from a cross between two old varieties, Mummy and Multiplier.

THE DIVISION OF BOTANY

REPEAL OF THE CANADIAN POWDERY SCAB REGULATIONS

BY H. T. GÜSSOW, DOMINION BOTANIST

THE special plant disease regulations relating to Powdery Scab of potatoes which have been in force since November 7, 1914, requiring the inspection and certification of potatoes grown in the Maritime Provinces and Quebec before they could be shipped either to other parts of the Dominion or to the United States, were rescinded by order-in-council on October 8th, 1915.

This action was taken by the Hon. Martin Burrell, Minister of Agriculture, who arrived at the conclusion from investigation carried on in Canada that the disease in question did not warrant the drastic action that had been thought necessary by the United States in placing an embargo against all Canadian potatoes. The effect of the United States regulations barred Canada from the United States markets, and seriously hampered the movement

of potatoes within Canada itself. Moreover, the investigation carried on by the scientific staff of the Department of Agriculture, under the direction of the Dominion Botanist, revealed that Powdery Scab did certainly not prove a destructive disease in this country which would call for special legislative measures concerning its control.

The removal of the regulations now permits potatoes to be shipped unrestricted from one part of the Dominion to another. Negotiations are under way to induce the United States authorities, who have already removed their own domestic quarantines against Powdery Scab, to also remove the embargo still in force against Canada. It is hoped that the action of the United States will be equally broad in its scope and that the former relations in the potato trade will be restored shortly.

THE DAIRY AND COLD STORAGE BRANCH

SUBSIDIZED COLD STORAGE WAREHOUSES IN CANADA

BY JOS. BURGESS, COLD STORAGE INSPECTOR

THE Cold Storage Act of 1907 provides for the payment of subsidies to public Cold Storage Warehouses, to the extent of 30 per cent of the cost of construction and equipment. The subsidy is paid in five annual instalments. It is required that the site of the warehouse, the plans, specifications, and the rates which it is proposed to charge, shall be approved by the Department before a contract is entered into for a subsidy.

An Inspector of this Branch visits all subsidized warehouses at least once, and many of them several times, during each year until the subsidies are fully paid. After that inspections are made when it is thought advisable.

The Inspector reports on the quantity of goods in storage, on the tem-

peratures maintained in different parts of the warehouse, and on the sanitary condition of the warehouse and its contents. It is his business to make suggestions, as occasion may arise, for improvement in the management of the warehouses.

On the whole the subsidized warehouses are kept in a high state of efficiency and, generally speaking, the public are receiving an excellent service in the storage of all kinds of produce. A large percentage of the warehouses are operated at one-half to full capacity, while several have been forced to enlarge their cold storage space and equipment to accommodate the increasing business.

The following is a complete list of subsidized warehouses in Canada, with the total refrigerated space, cost and subsidies:-

SUBSIDIZED PUBLIC COLD STORAGE WAREHOUSES IN CANADA

NAME	Total Refrigerated Space	Cost	Total Subsidy
	Cu. ft.	\$	\$
<i>Alberta</i>			
Campbell & Hamilton, Calgary	111,050	90,000 00	27,000 00
Edmonton C. S. Company, Edmonton	150,056	152,000 00	45,600 00
<i>British Columbia</i>			
The B. Wilson Co., Victoria	64,000	75,000 00	22,500 00
The Canadian Fish & C. S. Co., Prince Rupert	781,000	350,000 00	105,000 00
H. & K. Trading Co., Penticton	32,164	33,000 00	9,900 00
<i>Manitoba</i>			
The Brandon Cry. & Supply Co., Brandon	27,500	32,000 00	9,600 00
<i>New Brunswick</i>			
The New Brunswick C. S. Co., St. John	744,000	167,000 00	50,100 00
Cold Storage Limited, Woodstock	37,161	25,577 00	7,673 10
<i>Nova Scotia</i>			
The Lockport C. S. Co., Lockport	59,940	56,850 18	17,055 05
The Halifax C. S. Co., Pt. Hawkesbury			
(burned 1913)	75,000	30,386 69	9,115 99
North Atlantic Fisheries, Pt. Hawkesbury	338,550	200,000 00	60,000 00

NAME	Total Refrigerated Space	Cost	Total Subsidy
	Cu. ft.	\$	\$
<i>Ontario</i>			
Scott & Hogg, Peterboro.	90,000	14,500 00	4,350 00
The J. D. Moore Co., St. Mary's . . .	105,000	36,019 62	10,805 88
Lemon Bros., Owen Sound.	33,600	20,000 00	6,000 00
The Chatham Fruit Growers' Assn., Chatham	50,000	19,350 00	5,805 00
O'Keefe & Drew Abattoir Co., Chatham . . .	144,400	53,741 45	16,122 43
*The Palmerston C. S. Co., Palmerston. . .	169,984	35,000 00	10,500 00
The Trenton Cooperage Mills Ltd., Trenton..	166,446	50,919 41	15,275 82
The St. Lawrence Produce Co., Brockville. . .	106,000	52,000 00	15,600 00
Flavells Ltd., Lindsay	131,510	53,000 00	15,900 00
Gunns Ltd., Harriston.	57,069	38,877 30	11,663 19
The St. Thomas C. S. Co., St. Thomas	174,141	123,700 00	37,110 00
The Brantford C. S. Co., Brantford	36,000	29,600 00	8,880 00
The Whyte Packing Co., Mitchell	30,600	21,000 00	6,300 00
Algoma Produce Co., Sault Ste, Marie. . . .	55,806	67,000 00	20,100 00
R. H. Ashton, Morrisburg	45,000	approximately 22,000 00	6,600 00
<i>Prince Edward Island</i>			
Island C. S. Co., Charlottetown.	150,000	50,000 00	15,000 00
<i>Quebec</i>			
The Dominion Fish & Fruit Co., Quebec . . .	225,000	222,843 22	66,852 96
J. H. Sansregret, Joliette	23,394	22,444 10	6,733 23
<i>Saskatchewan</i>			
Moose Jaw C. S. Co., Moose Jaw	189,764	90,000 00	27,000 00
City C. S. Co., Regina	100,672	48,257 00	14,477 10
H. Gauvin, Vonda	24,000	22,450 00	6,735 00
	4,528,807	2,304,515 97	691,354 75

*Only one instalment of \$5,250 paid on Palmerston Warehouse.

GRIMSBY PRE-COOLING AND EXPERIMENTAL FRUIT STORAGE

CHERRY PACKAGE TEST—SEASON OF 1915

BY EDWIN SMITH

DURING the past two seasons popular favour in respect to cherry packages has been changing in Canada. British Columbia growers had previously been shipping both sweet and sour cherries mainly in the 4-basket plum crate. Ontario cherry shippers used the 11-quart Climax basket for local shipments, and both the 11-quart and 6-quart for western shipments of both sour and sweet cherries. The introduction of the strawberry crate into British Columbia, for

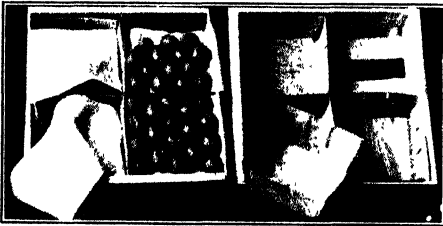
sweet cherry shipment, and the unpopularity of the 4-basket crate in the prairie markets, made the cherry package problem a very unsettled question in the west. The western demand for sweet cherries in the Hallock strawberry crate opens up new possibilities for eastern cherry districts.

The object of these tests was to secure information that would lead to a more standard package for Canadian sweet and sour cherries.

DEMONSTRATION SHIPMENTS OF VARIOUS PACKAGES

To make comparative tests of some of the packages in use, both as to carrying and selling merits, the following shipments were made:

1. Sour cherries, warehouse pack, 6-quart climax basket.
2. Sour cherries, warehouse pack, 4-basket plum crate.
3. Sour cherries, orchard pack, 6-quart climax basket.
4. Sweet cherries, warehouse pack, 4-basket crate.
5. Sweet cherries, warehouse pack, twenty-four 4/5-quart British Columbia strawberry crate.
6. Sweet cherries, warehouse pack, British Columbia twenty-four full pint strawberry crate.
7. Sweet cherries, orchard pack, Woolverton, three 6-quart basket crate.



THE 4-BASKET PLUM CRATE, LARGELY USED IN THE PAST IN BRITISH COLUMBIA FOR SWEET AND SOUR CHERRY SHIPPING

Smaller returns are realized from cherries shipped in this package than those shipped in some other packages.

The cherries having the warehouse pack were brought to the pre-

cooling warehouse and packed in the demonstration packing room, using western methods (facing the tops). The field packed lots were commercially packed and placed in the baskets by pickers, this being the customary manner of harvesting cherries in the east.

DESCRIPTION OF PACKAGES TESTED

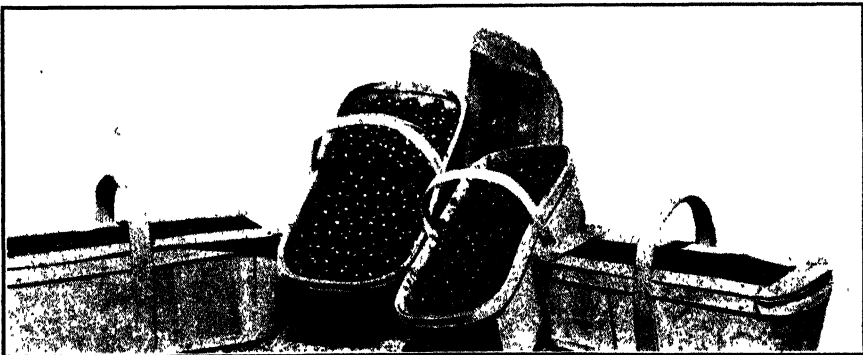
The 6-quart Climax basket is $4\frac{1}{2}$ inches deep, $15\frac{3}{8}$ x 7 inches at the top, and $13\frac{1}{2}$ x $5\frac{7}{8}$ inches at the bottom; it has a leno netting in the panel of the top, and holds 8 pounds of cherries.

The 4-basket crate contains four baskets, each $3\frac{3}{4}$ inches deep, $7\frac{5}{8}$ x $7\frac{5}{8}$ inches at the top and $6\frac{1}{2}$ x $6\frac{1}{2}$ inches at the bottom, and holds 20 pounds of cherries. The top is bound with tin.

The 24 4/5 quart B. C. Strawberry crate is a Hallock crate, using 24 boxes each $4\frac{3}{8}$ x $4\frac{3}{8}$ x $1\frac{7}{8}$ inches deep, and containing approximately 33.6 cubic inches.

The Woolverton Crate is a carrier $20\frac{1}{2}$ x $16\frac{1}{4}$ x $8\frac{1}{2}$ inches deep, and carries three 6-quart Climax baskets.

The tests with sour cherries were made in Winnipeg and Brandon markets. The cherries used were Early Richmonds, picked and packed July 2nd and 3rd, pre-cooled over Sunday and shipped the following Monday by refrigerated freight. The



THE 6-QUART AND 11-QUART CLIMAX BASKET PACKED WITH MONTMORENCY CHERRIES
The 6-quart basket is the most profitable package for sour cherries in Western markets

refrigerator car was opened in Win- Creelman, Scientific Assistant, on
nipeg and inspected by Mr. J. M. July 12th.

RESULTS OF CARRYING

PACKAGE DESCRIPTION	Average Waste	Market Condition
4-basket crate, warehouse pack	12.5 per cent	Good
6-quart basket, warehouse pack	12.9 "	Good
6-quart basket, orchard pack.	4.8 "	Very good

This shows that the 4-basket chard Pack) carried better than
crate and the 6-quart basket (Ware- either of the warehouse packs, un-
house Pack) carry about equally doubtedly being due to less handling.
well, but the 6-quart basket, (Or-

RESULTS OF SALES

PACKAGE	Net Weight of Fruit	Cost of Package and Packing		Average Sale Price	Average Net Returns to Growers	
		Total	Per Lb.		Per Package	Per Lb.
	Lb.	c.	c.	\$	c.	c.
4-basket crate warehouse pack	20	21 3	1 06	1 46	85 1	4 24
6-quart basket warehouse pack	8	6 5	0 81	594	35 7	4 46
6-quart basket orchard pack	8	4 0	0 5	594	38 2	4 78

The orchard packed 6-quart baskets gave the greatest net returns to the grower. They sold at the same price as the warehouse packed, and cost 2½ cents less per package to pack.

Winnipeg markets preferred sour cherries packed in 6-quart baskets.

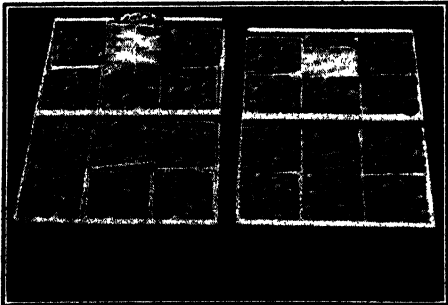
The 4-basket crate is an unpopular package for this fruit.

RE-SHIPMENTS TO BRANDON, MAN.

To test the carrying quality of pre-cooled, Early Richmond cherries, when re-shipped by ordinary express, four 4-basket crates and six 6-quart baskets were re-shipped to Brandon with the following results:

The cherries were in good market condition upon arrival, although showing more waste than in Winnipeg.

The 6-quart baskets sold for 75 cents each, and the 4-basket crate for \$1.25 each. The 4-basket crate is not a popular package for sour cherries in the Brandon markets, and the 6-quart basket is generally preferred by the trade.



THE 24 4/5-QUART, AND THE 24-FULL PINT HALLOCK STRAWBERRY CRATES

SWEET CHERRIES

The sweet cherries (Black Tartarian variety) were shipped to Winnipeg, packed in 24-full pint strawberry crates, 24 4/5-quart strawberry crates (British Columbia) and the 4-basket crate. A Woolverton crate was included in the test, and it carried Smith's Bigarreau.

This shipment was made by express with transportation costs based upon the carload freight and icing rates.

Inspection showed that the fruit carried best in the 24 4/5-quart crate, although not much difference was to be seen in the general appearance of the fruit.

RESULT OF SALES

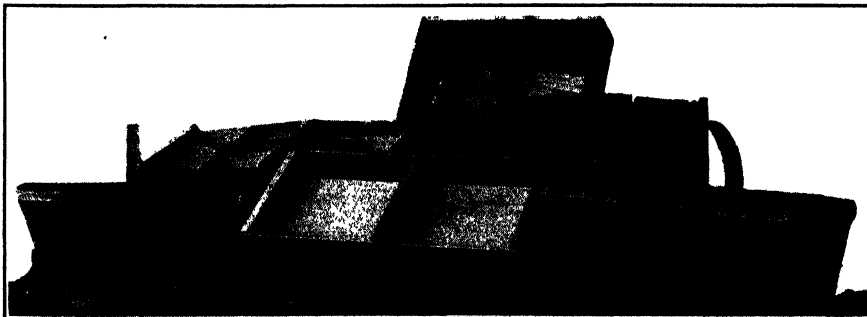
PACKAGE	Net Weight of Fruit	Cost of Package and Packing		Average Sale Price	Average Net Returns to Growers	
		Total	Per Lb.		Per Package	Per Lb.
	Lb.	c.	c.	\$	\$	c.
24-full pint strawberry crate	17	32	1 8	3 50	2 43	14 3
24 4 5-quart strawberry crate	24	35	1 4	4 00	2 75	11 5
4-basket crate	20	21 3	1 6	2 00 (estimated)	1 31	6.5
Woolverton crate, 3 6-quart baskets	24	24 0	1 0	3 50	2 48	10.3

The full pint strawberry crate gave by far the best net returns. For shipping without repacking, the 6-quart basket in the Woolverton crate is a desirable package.

PACKAGES ADAPTED TO CAR-LOADING

The box or crate type of package is undoubtedly the most satisfactory for loading in cars. Baskets may be loaded without breakage if care is taken, but should be raised up on false floors to aid refrigeration; should be loaded in tiers, commencing at one side of the car and should

have a space of two feet or more in the centre of the car. In order to get the centre space, the load must be "squared off" and braced with bulk heads and at least six 2 x 4 inch braces. These must be pounded into place so as to squeeze the load and make it rigid to prevent shifting. If loaded in this way, there will be no more breakage than in boxes. Boxes or crates require more secure bracing and stripping every third layer, since these packages do not have the solidifying features of the basket handles.

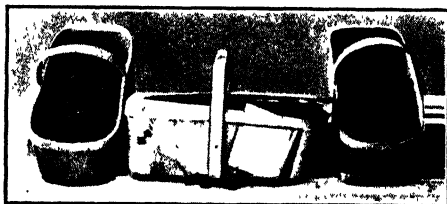


CHERRY PACKAGES MOST COMMONLY USED IN CANADA

CONCLUSIONS

1. The 6-quart Climax basket is the most satisfactory package for sour cherries in prairie markets. The 4-basket crate is unpopular in Manitoba markets. The 6-quart basket carried the fruit equally well, sold more readily and the fruit netted the grower slightly over $\frac{1}{2}$ a cent a pound (.54 cents) more than that packed in the 4-basket crate.

2. It is not desirable nor profit-



POOR PACKING, POOR BASKETS AND CARELESS LOADING IN CARS RESULT IN MARKET CRITICISM OF THE BASKET

able to repack sour cherries in 6-quart baskets. The orchard packed fruit commanded as high prices as the warehouse packed, showed less waste, and at the same time, saved the packing charge of $2\frac{1}{2}$ cents per basket.

3. The 24-full pint hallock strawberry crate is the most desirable package for fancy, sweet cherries in prairie markets. It carries the fruit well, is the most popular seller, and netted the Ontario grower 14.3 cents a pound as against 11.5 cents per pound in the 24 $\frac{4}{5}$ -quart and 6.5 cents a pound in the 4-basket crate.

4. The 24-full pint hallock strawberry crate has possibilities of being a popular package in eastern markets. Trial shipments sold for \$2.40 a crate in Montreal.

5. In packing sweet cherries in the strawberry crates, the boxes should be faced with stems underneath.

SPECIFICATION FOR CHEESE BOXES

SUPPLEMENT No. 5 to the Canadian Freight Classification No. 16 which contains the new specification for cheese boxes as approved by the Board of Railway Commissioners has just been issued, and the specification is here reproduced.

NOTE.—When cylindrical cheese boxes are used as outside containers, they must meet the following requirements:

(a) Tops and bottoms (headings) to be not less than $\frac{5}{8}$ inch in thickness, and consist of not more than 3 pieces.

(b) Hoops and bands to be not less than $\frac{1}{5}$ inch in thickness.

(c) Hoops to overlap at joint not less than five inches and to be fastened with staples or nails not more

than one inch apart and firmly clinched on the inside.

(d) Bands to be nailed to the heading (top and bottom), as follows: one nail on each side of every joint, with additional nails not more than 4 inches apart.

(e) Bottom rim to be not less than $1\frac{1}{2}$ inch in width, and top rim not less than 3 inches in width.

(f) Covers must fit closely and boxes must be trimmed flush so that the heading of the cover shall rest on the cheese.

Cheese in cylindrical boxes not meeting the above requirements not taken.

The order of the Board of Railway Commissioners makes the foregoing specification effective on December 1, 1915.

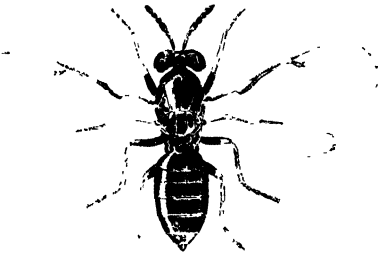
THE ENTOMOLOGICAL BRANCH

ASPARAGUS BEETLE EGG PARASITE

BY W. A. ROSS, FIELD OFFICER IN CHARGE OF ENTOMOLOGICAL LABORATORY, VINELAND STATION, ONT.

EARLY in the month of June, 1915, large numbers of a minute, dark blue-green, four-winged chalcid fly were found destroying the eggs of the Asparagus beetle, *Crioceris asparagi* L. at Vineland Station, Ontario. Specimens were submitted to the United States Bureau of Entomology and the species was determined by Mr. J. C. Crawford as *Tetrastichus asparagi*

positis within it her own eggs (three to nine in number). In due course, the beetle egg, its viability unaffected, hatches and the grub grows to maturity. The chalcid eggs, in the meantime, hatch and the parasites apparently nourish themselves on the body fluids of the grub without appreciably interfering with the development of their host. The full grown asparagus grub enters the soil, and forms the pupal cell, but proceeds no further because at



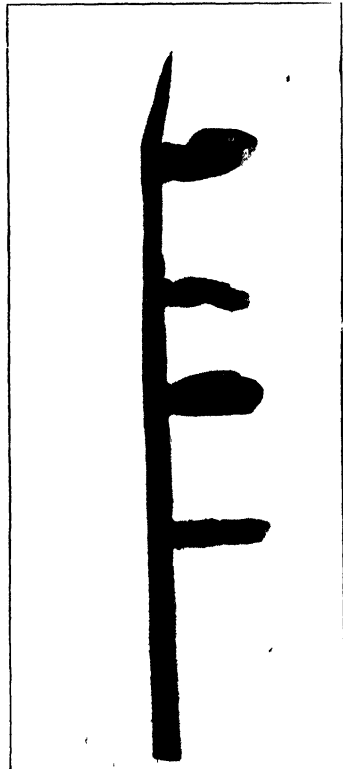
ASPARAGUS BEETLE EGG PARASITE
Tetrastichus asparagi Cwfd., female adult enlarged 28 times (After Johnson, U.S. Dept. of Agr.)

Cwfd, the Asparagus Beetle Egg parasite, an insect heretofore unrecorded in Canada.

This parasite has a very curious life-history. The female, by means of a sharp ovipositor, pierces the egg of the Asparagus beetle and de-



LARVÆ OF ASPARAGUS BEETLE EGG PARASITE
Enlarged 8 times. (Original)



EGGS OF THE ASPARAGUS BEETLE
Enlarged 8 times, showing collapsed state owing to feeding habit of Asparagus Beetle Egg Parasite. (Original)

this stage it is wholly consumed by the chalcid larvæ. The parasites then pupate within their host's cell, and later emerge as adults.

The adult chalcid is a voracious feeder on the eggs of the Asparagus beetle, and in this capacity the insect is really of greater economic importance than in the role of a parasite. In support of this statement I may mention that, early in June, Asparagus beetles and their eggs were exceedingly abundant, but the hungry chalcids destroyed so many eggs that very few grubs hatched out (less than one per cent).

In feeding, the chalcid stands on the egg, plunges her ovipositor into it, and energetically works the ovipositor up and down usually for three or four minutes. She then steps back, applies her mouth parts to the puncture and feeds on the egg contents.

According to Mr. F. A. Johnson, of the United States Bureau of Entomology, there are three generations of this insect on Long Island, N. Y., but in the Niagara district we only found two. Adults of the first generation were very abundant during early June, but by June 28th they had all disappeared. Second brood "flies" emerged late in July, and were found on the asparagus plants until the latter part of August. This generation was much smaller in number than the first.

The economic value of the Asparagus Beetle Egg parasite was well illustrated this season on the Vine-land Station Experimental Farm. During June the Asparagus beetle was present in remarkably large numbers, but the work of the chalcid was so effective that it was not found necessary to spray the asparagus plants.

THE LIVE STOCK BRANCH

SALE OF CANADIAN CATTLE

BY H. S. ARKELL, M.A., B.S.A., ASSISTANT LIVE STOCK COMMISSIONER

FOLLOWING investigations under the new Markets' Policy, the Minister of Agriculture has secured such information relative to the stocks of cattle in Canada as to enable him to interest the war office in purchasing in this country. The difficulty of securing sufficient refrigerated ocean space, together with the risks and cost of transportation, has made it practically impossible for the Canadian packers to find a profitable outlet, notwithstanding the scarcity and the high price of meat in Great Britain and the allied countries. While certain shipments have been made, these have not been of a sufficient scope to place the export business on a firm footing and to enable Canada to take advantage of the opportunity for the sale of her product afforded by the firm condi-

tions of the foreign market. Lacking an export outlet to Great Britain and Europe, it became clear that the sale of our cattle this fall could scarcely be carried on without a material reduction in price. While the American market has been absorbing large numbers of our stock, these have been sold to the disadvantage of the Canadian feeder to the extent of a considerable item per head.

An understanding of the situation immediately led the Minister to make representations through the Acting High Commissioner, Sir George Perley, to the British War Office. As a result of these, such encouragement was given as to warrant him in securing the co-operation of the packers in jointly contracting for the sale

of their available supply. Those engaged in the tinned meat business have met together, bulked their offer and submitted tender through the Minister to the war office on joint account. As a result of these negotiations a contract for approximately six and a quarter million pounds of corned beef has been awarded to Canada.

A further conference of the packers was held in Ottawa with the view of discussing the basis upon which the war office might be interested in the purchase of frozen beef, a large supply of which will be available through the killing of Canadian cattle this fall. At this conference the packers acceded to the suggestion of the Minister, it being agreed that the Dominion Government was in a better position to secure business for Canada than they could possibly expect to achieve acting individually. They, accordingly, submitted a tender, on joint account, which has already been conveyed to the British war office through Sir George Perley. The department has been advised

that decision in regard to the awarding of the contract may shortly be expected.

Should these contracts be obtained very great benefit may be expected to result to our live stock industry. A free outlet for the Canadian product will undoubtedly strengthen our market and at the same time fully take care of the supplies that come forward. It is hoped further that it will lead to the discontinuance of shipment of feeders across the line and to the finishing of our stocker cattle upon the feed which is in such abundance in Canada this year. The business resulting to the packing houses and to the railroads should provide for the employment of a large number of men and may be expected to have an appreciable effect in further strengthening the credit of the country. It is hoped also that this movement may lead to the establishment of a permanent export trade under conditions which will result to the permanent advantage of the Canadian feeders.

CHANGES IN STAFF OF POULTRY DIVISION

WHILE the activities of the Live Stock Branch of the Dominion Department of Agriculture with regard to the organization of Co-operative Egg and Poultry Associations have been largely confined to date to the Eastern Provinces of the Dominion, the need and opportunity for work of this kind in the Western Provinces have not been overlooked.

From the fact that co-operative marketing of poultry products was something entirely new, it was thought advisable to thoroughly test out the practicability of the system before extending it to a wider area. Satisfactory results having been obtained in the East, arrangements are now being made to extend the

work to the Western Provinces.

The new field to be organized will receive the benefit of the experience of men who have been associated with the co-operative work since its inception. Mr. T. A. Benson, B.S.A., who for the past three years has been in charge of the co-operative organization in Prince Edward Island, is being transferred to the province of Alberta to fill a position similar to that which he has held in Prince Edward Island.

Mr. J. H. Hare, B.S.A., who has had an extensive experience in this work, not only with the Ontario Provincial Department of Agriculture, but also during the last two years with the commercial and marketing end of the work undertaken by the Live Stock

Branch, has been given general supervision of the Egg Circle work being conducted by the Branch. Mr. Hare is now in the Western Provinces, and will devote the greater part of his time for the next year to directing operations there. For the present, he will confine his activities principally to the province of Saskatchewan.

Mr. R. J. Allen, B.S.A., has been appointed to take immediate charge of the organization of co-operative Egg and Poultry Marketing Associations in Manitoba. Mr. Allen has had an extensive experience not only in Departmental work, but also in the commercial field and goes to Manitoba well-fitted to carry on this work effectively.

Mr. Wm. Kerr, B.S.A., who was in district representative work in Ontario for some time previous to joining the staff of the Live Stock Branch, and who has been associated with Mr. Benson in Prince Edward Island during the past summer, is now in charge of the work in that province. Both during his college course and later, during active work in the field Mr. Kerr has made a special study of the theory and practice of the co-operative marketing of farm products. He enters the work in Prince Edward Island, therefore, well-equipped to take up the problems that have developed in connection with the advanced nature of the work at that point.

The cultivation of flowers is of all the amusements of mankind the one to be selected and approved as the most innocent in itself, and most perfectly devoid of injury or annoyance to others; the employment is not only conducive to health and peace of mind, but, probably, more good-will has arisen, and friendships been founded, by the intercourse and communication connected with this pursuit than from any other whatsoever. The pleasures, the ecstasies, of the horticulturist are harmless and pure; a streak, a tint, a shade, becomes his triumph, which, though often obtained by chance, are secured alone by morning care, by evening caution, and the vigilance of days; and employ which, in its various grades, excludes neither the opulent nor the indigent, and, teeming with boundless variety, affords an increasing excitement to emulation, without contention or ill-will.—*Jesse.*

PART II

Provincial Departments of Agriculture

PUBLICATIONS AND THEIR DISTRIBUTION

The discovery, by governments, of superior methods in agriculture is of little value unless these are made available to farmers. The departments of agriculture over Canada, recognizing this fact, have worked out policies calculated to accomplish this purpose in the most effective way.

While the system of publicity employed by each province is no doubt good, there may be many points upon which each could learn from the others. In view of this there has been here brought together a number of articles that will make clear the character and number of publications issued annually by a number of the provincial departments of agriculture and the manner of their distribution.

PRINCE EDWARD ISLAND

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

THE Department of Agriculture of Prince Edward Island issues regularly the Annual Report; five *Crop and Live Stock Bulletins*, in the months of May, July, August, September and November, the exact date depending on the season, and newspaper articles from time to time.

This year the report of the Fields of Standing Grain competition is being printed as a separate report, and a Directory of the breeders of pure-bred live stock of Prince Edward Island is now in press.

Copies of the annual report are mailed to the Departments of Agriculture of Canada and the United States, and to some officials of these Departments; to the presidents and secretaries of the Farmers' Institutes and other agricultural associations of the Province; and to others who may apply for them. Quite a large number of them are distributed

through the members of the Legislature.

The Crop and Live Stock reports are mailed to the more important papers of the Maritime Provinces, and to the agricultural papers of Eastern Canada; to the larger dealers in farm products in the Maritime Provinces; to the secretaries of Boards of Trade, and to others who may ask to have their names placed on the mailing list.

The results of the Standing Fields of Grain competitions will be mailed to the secretaries of all the agricultural societies of the Maritime Provinces and of Eastern Quebec; to grain and seed merchants, and to others who may apply.

The Directory of the live stock breeders will be mailed to the presidents and secretaries of agricultural associations; to breeders of pure-bred stock in the Maritime Provinces, and to others who may apply.

NOVA SCOTIA

BY M. CUMMING, B.S.A., SECRETARY FOR AGRICULTURE

THE Department of Agriculture of this province has made a special effort to make the annual report of the Secretary for Agriculture a comprehensive and popular report which will be read by the people in general. With this in view we have included within the covers of this report summarized reports of the various divisions of the Department of Agriculture, including the Agricultural College, and these have been the only public reports we have issued on the work of each division. To make this report popular, we have included since 1907 a series of articles each year on a different phase of farming, occupying about 150 pages. One of these series for example dealt with dairying in Nova Scotia; the series for the current year will deal with soil cultivation in Nova Scotia, etc. Largely as a result of this latter feature, we have had a great increase in the demand for this report, and for that reason we have been able to a large extent to have our mailing lists revised for each county, partly by members representing the counties and partly by members of our own staff, and partly through the fact that an increased number of people made personal application for the report. While, therefore, we have a reasonably fixed list of people to whom reports are sent, conditions are such that this list is fairly carefully gone over each year. I realize, however, that this can be done in small provinces to an extent to which it could not be done in a larger province.

From time to time various mem-

bers of the Department and of the College of Agriculture issue bulletins, but we have not been in the habit of sending these bulletins to our regular mailing list, rather we have summarized these bulletins in the newspapers, and for the most part have been in the habit of sending the bulletins first of all to the secretaries of our agricultural societies and a few other officials, and second to those who on seeing the newspaper summary of a certain bulletin have made application for the same. This means that we have not distributed as large a number of our popular bulletins as would be distributed if we had a set mailing list; on the other hand, we have felt that our bulletins have possibly been somewhat more appreciated on this account. In general we have felt that there are limitations, and well marked limitations to the extent to which free bulletins, etc., are appreciated and read by the public. Hence, some two months ago, we organized in connection with our Department of Agriculture a Press Service Bureau which is in charge of an expert newspaper man, and we are endeavouring through this bureau to send to the popular press of the provinces summaries of the articles, bulletins, etc., news items, and occasionally long articles dealing with special subjects. This Bureau has been well received by the Press of Nova Scotia, and it is our opinion that it will serve as a medium for bringing information to the people of Nova Scotia to a greater extent than any previous measures which we have made use of.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

IMPROVED methods of farming and the various means of demonstrating these in a practical

manner, together with the experimental work carried on by the Department of Agriculture, are made

available to the general public in the form of reading matter as follows:

PUBLICATIONS

(a) The annual report of the Department of Agriculture is printed in February or March, and distributed immediately. It contains the reports of the various members of the staff, the record of the year's crops, the accounts and statistics of the agricultural societies, statistics of the dairy industry and live stock, records of the field crop competitions, seed fairs, cow testing associations, weather, etc. The report of the horticulturist relates the work of the Horticultural Division, somewhat in detail, and generally includes a report of the activities of the Fruit Growers' Association.

(b) From time to time bulletins and leaflets designed to convey practical information as briefly as possible are prepared. These are not sent out as freely as the reports, but notice of their publication appears in all the provincial papers so that the interested parties may apply for copies.

(c) There are no special publications.

(d) Occasionally members of the staff contribute articles of timely interest to the leading newspapers. Periodically, the work of the Department is reviewed and outlined to the press by the Minister of Agriculture.

MAILING LISTS

(a) The report on Agriculture is mailed to all the members of the agricultural societies, the boards of trade, prominent business concerns, all the newspapers, and to a list of people compiled from special requests received during the last few years.

The report of the horticulturist is distributed to the more interested fruit growers and farmers of whom a list has been prepared since the creation of the Horticultural Division in 1910, and to which list the names of correspondents are added. The lists are such that very little revision is necessary.

DISTRIBUTION

From time to time announcements are made in the various newspapers that certain publications are available, and a synopsis of their contents is given. Recently, we have adopted the plan used for some years by the Ontario Department of Agriculture whereby the various bulletins have printed on the back cover a list of all the other bulletins available.

Publications are generally mailed in franked envelopes, though sometimes when large quantities have to be sent out, wrappers are as effective and cheaper.

QUEBEC

BY E. BELANGER, JOURNAL D'AGRICULTURE

IN addition to the general report on the work of the Department, the Quebec Department of Agriculture publishes every year, ten or twelve reports on the activities of the various branches, societies or associations which are under its control. A number of pamphlets, bulletins and circulars, written by

experts, with a view to giving more detailed information to the farmers on various branches of their work, are also issued at the expense of the Department, as well as timely articles for insertion in the newspapers of the province.

The Journal of Agriculture, which has been published regularly as the

official organ of the Department of Agriculture since 1877, is very useful in disseminating agricultural information among the farmers. This publication now has 100,000 subscribers; 90,000 for the French edition, published on the 15th of each month, and 10,000 for the English edition, issued on the 1st of each month. It is extremely helpful to the Department, as well as in the spread of agricultural knowledge as for the guidance of the associations which are under the supervision of the Department for the conduct of the Educational campaigns that are undertaken.

The distribution of agricultural pamphlets or bulletins is done through the farmers' clubs and agricultural societies, the district representatives, the lecturers of the Department, at farmers' meetings, or at the short courses given in the schools of agriculture and in the various districts of the province.

The distribution branch also forwards to the addresses contained in its mailing lists, bulletins, circulars or notices for calling special meetings, for imparting special information, or for purposes of agricultural statistics. Every month, a report showing the number of pamphlets or bulletins distributed and the number in stock is prepared by this branch; for instance, it is seen that in September 12,541 pamphlets were distributed, leaving in stock some 75,272 copies.

The departmental publications are generally advertised in the *Journal of Agriculture*, and the distribution branch forwards them by mail to all

the farmers who make a request for the same.

In order to give a better idea of the character and number of these various publications, the titles of the pamphlets and bulletins, with a number of circulars, reports and agricultural laws, published this year are given herewith.

PAMPHLETS OR BULLETINS PUBLISHED SINCE JANUARY, 1914

Ten Years of Practice and Experiment in the Poultry Yard.
Feeding of Poultry.
Tobacco Growing.
The Farrer's Horse.
Cereal Growing.
Breeding and Feeding of the Bacon Hog.
The Canadian Vegetable Garden.
List of Butter and Cheese Factories in the Province of Quebec.
The School Garden.
Agriculture and the Agricultural Profession.
The Growing of Clover.
The Growing of Fodder Corn.
Fruit Culture in the Province of Quebec.
Opportunities in Quebec.
Diary of my Garden, for Children Gardeners.
Programme of Domestic Science Teaching, with the Programme of Studies in Elementary Schools.
The Condition of the Crops in the Province of Quebec in July.
The Condition of the Crops in the Province of Quebec in October.

In addition to these publications, the Department of Agriculture also has the following for distribution: 12 annual reports, 16 circulars, 3 agricultural laws and several pamphlets published two or three years ago. These pamphlets and circulars make up a total of seventy publications of various kinds.

MACDONALD COLLEGE

BY DR. F. C. HARRISON, PRINCIPAL

1. PUBLICATIONS

(a) *Reports*:—A brief report of the work of Macdonald College is included in the annual report of the Governors, Principal and Fellows of

McGill University. This report is distributed by McGill University.

(b) *Bulletins*:—The College issues occasional bulletins. Up to the present the following have been issued:

Poultry Bulletin; Farmers' Vegetable Garden; Milk Supply of Montreal. The second edition of Farm Poultry has recently been published. These are sent to all our exchanges, and to a mailing list which includes those interested in agriculture in the province of Quebec, and a large number of representative farmers, etc.

(c) *Special Publications*:—The students issue a quarterly magazine. The section dealing with the work of the rural schools is edited by members of the staff of our School for Teachers. A copy of this is sent to each school in the province.

(d) *Newspaper Articles*:—The English edition of the *Quebec Journal of Agriculture*, the official journal of the Quebec Department of Agriculture, is edited by a member of the staff of Macdonald College, W. Lochhead, Professor of Biology, assisted by J. F. Snell, Professor of Chemistry. This has a circulation of over ten thousand, and is sent, as in the case of all newspapers, from the office of publication.

In addition to this many newspaper articles are contributed by members of the College staff to the

Quebec Journal of Agriculture, and also to other leading agricultural papers.

MAILING LIST

Our mailing list is made up of our exchanges, agricultural experimental stations, newspapers, etc.; Dominion and local members of parliament, etc.

We keep in card index form a list of all those who have made inquiries at the College. This list is revised from time to time from official lists, and the members of our staff frequently send in additional lists of names of farmers, etc., who desire publications sent to them.

DISTRIBUTION

We usually send to the newspapers an account of any publication we issue, one or two notices being sent out in advance, and one or two after the publication has been issued.

As this is not a Provincial institution we have no free mailing privileges, and, hence, our publications are usually put in open envelopes and mailed from the College post office.

ONTARIO

BY W. BERT ROADHOUSE, DEPUTY MINISTER OF AGRICULTURE

THE Ontario Department of Agriculture distributes each year slightly over 600,000 pieces of literature. These include both reports and bulletins and are practically all of an educational nature, designed to deal with the wide variety of subjects which come up in general farm practice. The following is a list of the regular annual reports which have been issued each year for several years past, and each of which has a circulation varying from 4,000 to 30,000:—

- Minister's Report.
- The Ontario Agricultural College.
- The Experimental Union.
- The Ontario Veterinary College.
- Agricultural Societies and Field Crop Competitions.

- Horticultural Societies.
- Vegetable Growers' Association.
- Live Stock Associations.
- Stallion Enrolment Board.
- Farmers' Institutes.
- Women's Institutes.
- Dairymen's Associations.
- Entomological Society.
- Fruit Growers' Association.
- Corn Growers' Association.
- Beekeepers' Association.
- Bureau of Industries (Agricultural Statistics).

While these are called reports, they are in the main made up of addresses and papers on agricultural subjects, in addition to information as to the work carried on by the branch with which they deal during the previous year. They vary in size from one hundred to two hun-

dred or two hundred and fifty pages, and hence contain a great deal of information of considerable value.

Bulletins are issued from time to time as required, possibly an average of ten being issued each year. These are prepared by members of the staff of the Ontario Agricultural College or other experts of the Department, and at the present time the Department is endeavoring to standardize its bulletins so as to have a complete statement of the essential, fundamental facts on any one subject under one cover. The demand for a bulletin of this nature is very great, and consequently it is necessary to issue those of more general interest in editions of 40,000 or 50,000, and not unfrequently further editions have to be issued to supply the demand before a year elapses.

In addition to the educational bulletins, four crop and one Municipal bulletin are issued each year, giving statistics and information on the condition of the crops, and figures as to municipal organization and business.

During the past few months the Fruit branch of the Department has undertaken to issue a special four-page bulletin each month for distribution among the fruit growers. This contains current information of interest to the growers and timely seasonal suggestions calculated to be of assistance in their work.

Newspaper articles are supplied from time to time, and during the recent past it has been the practice to send a brief paragraph to all the papers in the Province giving a synopsis of a report or bulletin being issued at the time by the Department.

As for the general distribution of these publications, I may say that the mailing list includes the members of the following organizations:—

- Agricultural Societies.
- Horticultural Societies.
- Farmers' Institutes.
- Women's Institutes.
- Fruit Growers' Association.

- Vegetable Growers' Association.
- Beekeepers' Association.
- Corn Growers' Association.
- Dairymen's Associations.
- Experimental Union.

- Boards of Trade.
- Graduates and Associations of the Ontario Agricultural College.
- Clerks, Cities, Towns and Villages.
- Township Clerks.
- Members Legislative Assembly.
- Daily and Weekly Newspapers in Ontario.
- Principals, Continuation Schools.
- Science Teachers, Collegiate Institutes and High Schools.
- Public School Inspectors.
- Correspondents re Crop Conditions.
- Farmers who Return Crop Cards.

It should not, of course, be supposed that copies of all the publications are sent to all these names. The aim is to send only those publications in which the different persons would be specially interested. There are, of course, a number of publications of such general interest that they would be of value to all farmers, but on the other hand, there are special publications, such as those dealing with tender fruits, beekeeping, etc., which are of special value only to those who are making a specialty of these lines. All these points are taken into consideration in drawing up the list to which the different publications are forwarded.

In addition to the mailing list, a large number of copies of the different publications are distributed through the offices of the district representatives of the department and in response to individual requests received by the department at Toronto. The district representative offices are kept well supplied with bulletins and publications of all kinds and in this way serve as a very important channel of distribution.

The system of revision includes making the necessary changes consequent upon the changes in the yearly membership of the different organizations. In many cases this involves yearly changes, but in others the changes are not so frequent.

Publicity is obtained for the re-

ports in the manner mentioned above, namely, by sending notices to the papers, and the mailing is all done from the office of the Department at Toronto. Publications are printed by the King's Printer, and are delivered to the Parliament Buildings, and then sent out from the head office. The great majority of the names are kept on stencils so that the addressing of the envelopes is done by machinery, and is greatly simplified in this way.

The whole question of publications is a most important one in agricultural education. The eagerness with which a publication con-

taining some real concrete, definite information in more or less concise form is sought for, shows the possibilities of its value. There is no doubt much truth in the repeated statements that a great deal of very valuable information does not accomplish the maximum because of its inaccessibility, either through delay in publication or through being mixed up with other matter so that it is not immediately apparent. To get the information out in a practical, prompt and attractive way is one of the most important problems before Departments of Agriculture.

MANITOBA

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

IN addition to the periodical crop and live stock reports, annual reports, etc., the Manitoba Department of Agriculture issues a large number of agricultural bulletins and circulars, besides such special illustrated booklets as are used from time to time as immigration literature.

REPORTS

The annual report of the Department is published for general circulation immediately after it has been laid on the table of the House. It reviews the activities of the Department during the fiscal year and gives comparative crop and live stock statistics for many years past, as well as a complete list of cattle brands registered, and enrolments in accordance with the Manitoba Horse Breeders' Act. Tables showing the annual rainfall in Manitoba, financial summaries of Manitoba Agricultural Societies, and statements of hospitals and similar institutions in the province are included among the statistics, with the Department's statement of expenditure granted by the Dominion Government under

THE AGRICULTURAL INSTRUCTION ACT. The various reports assembled are as follows: Annual report of the Board of Directors of the Manitoba Agricultural College; report of the Superintendent of Dairying; Horticultural Association's report; report of the Provincial Noxious Weeds Inspector; report of the Chief Game Guardian; report of the Manitoba Live Stock Associations; general review of Immigration with reports of various provincial immigration officials; report of the managing-director of agricultural societies; annual report of home economics societies, etc.

The annual report of the Manitoba Agricultural College covers fully every branch of the College work as carried on during the year by the staff, including Household Art, Household Science, Animal Husbandry, Bacteriology, Botany, Chemistry, Dairying, Agricultural Engineering, English, Field Husbandry, Beekeeping, Horticulture and Forestry, Poultry Husbandry, Physics, Soils, Veterinary Science, Extension Service, as well as full particulars as

to the administration of College affairs. Results of experimental work, short courses, etc., are recorded in the respective departments.

During the year the Department issues two reports on crops, live stock, etc., one in June and one in December. These bulletin reports are summarized from returns received from seven hundred regular correspondents of the Department, resident in every district of the province. The June bulletin reviews the seeding conditions and the crop prospects; also dairying and poultry production; the statistics show areas under various grain crops, potatoes and roots, fodder crops, etc., and also include live stock tables, farm help situation, list of creameries and cheese factories and a supplement of statistics for various years past. The December bulletin reviews the harvest season, and the statistics give total and average yields of all crops; also dairy products, poultry disposed of by farmers, land prepared for crop the following year, wheat marketed, expenditure for farm buildings, threshing outfits, honey produced by farmers, value of improved land and unimproved land per acre, registration of stallions, etc., with supplementary statistics covering a period of years.

BULLETINS

At present the Department has twenty agricultural bulletins and thirty-two circulars available for distribution among the farmers of the province. Besides these the Extension Department at the Manitoba Agricultural College has a complete range of Home Economics literature, representing a correspondence course in Food, Home Nursing, Cookery, Laundry, Sewing, Personal Hygiene, etc., thirty-two lessons all told.

Most of the bulletins and circulars are well illustrated with half-tone cuts, drawings and plans. The various members of the Agricultural College staff have endeavoured in

preparing this literature to present the subject in the most practical way, to answer questions generally asked by farmers experiencing difficulties and to set forth the instruction lucidly. Perhaps the best way to express the range of subject matter is to quote titles:

BULLETIN

- No. 1. Horses.
- " 2. Twelve Noxious Weeds.
- " 3. Care of Milk and Cream.
- " 4. Protection of Farm Buildings from Lightning.
- " 5. The Farm Garden.
- " 6. Farm Poultry in Manitoba.
- " 7. Hog Raising in Manitoba.
- " 8. Cow Testing.
- " 9. Repairing Farm Equipment and Roads.
- " 10. Plans for Farm Buildings.
- " 11. Canning and Preserving.
- " 12. The Farm Flock.
- " 13. Barn Ventilation.
- " 14. Care of Cream for Creameries.
- " 15. Boys' and Girls' Clubs.
- " 16. Hay and Pasture Crops in Manitoba.
- " 17. Silo Construction and Ensilage Production.
- " 18. Beekeeping in Manitoba.
- " 19. Soil Drainage.
- " 20. College Extension Service.

CIRCULAR

- No. 1. The Farmers' Beef Ring.
- " 2. Some Facts about Sheep.
- " 3. Manitoba's Hog Market.
- " 4. Beef Cattle Situation.
- " 5. A Few Dairy Facts.
- " 6. A Plea for Bird Houses.
- " 7. Our Friends—The Birds.
- " 8. Hints on Home Nursing.
- " 9. Practical Hints on Poultry.
- " 10. Meat and its Substitutes.
- " 11. What Every Girl Should Know
- " 12. Poison Ivy and Other Poisonous Plants.
- " 13. Cream for Creameries.
- " 14. Method in Dressmaking.
- " 15. Fattening Chickens for Market.
- " 16. Pork Making on the Farm.
- " 17. Servants in the House.
- " 18. Alfalfa in Manitoba.
- " 19. Fodder Corn in Manitoba.
- " 20. Alfalfa Inoculation.
- " 21. Barley Growing.
- " 22. Notes on Growing of Trees, Shrubs, etc.
- " 23. Improving the Farm Egg.
- " 24. Growing Plums in Manitoba.
- " 25. Growing Cherries in Manitoba.
- " 26. Control of Insect Pests.
- " 27. Pruning Trees for a Cold Climate.
- " 28. Spray Mixtures.

CIRCULAR

- No. 29. Tree Pests and Cutworms.
- " 30. Treatment of Alkali Soils.
- " 31. Rye as a Weed Eradicator.
- " 32. Cultivation after Harvest for Weed Control.

The list of bulletins and circulars issued by the Department is constantly growing; it is a very important feature of extension work and is proving very valuable.

HOME ECONOMICS LITERATURE

FOOD:—

- Lesson 1. Theory of Foods.
- " 2. Cost and Adulterations.
- " 3. Fruit, Vegetables and Cereals.
- " 4. Proteid Foods.
- " 5. Flour Mixtures.
- " 6. Bread and Buns.

HOME NURSING:—

- Lesson 1. Rules to Observe.
- " 2. Nurse's Routine Duties.
- " 3. Comfort of Patient.
- " 4. Symptoms of Sickness.
- " 5. Home Treatments.
- " 6. Accidents and Emergencies.
- " 7. Contagious Diseases.
- " 8. Feeding the Sick.
- " 9. Maternity Nursing and Baby Hygiene.

COOKERY:—

- Lesson 1. The Principles of Cookery.
- " 2. Effects of Heat on Food Materials.
- " 3. Bread, Cereals, and Vegetables.
- " 4. Combination of Food Stuffs.

LAUNDRY:—

- Lesson 1. Equipment — Water — Some Common Alkalis.
- " 2. Soap, Soap Substitutes, Bleaching.
- " 3. Fabrics (Cotton and Linen).
- " 4. "The Family Wash" (Part 1) "Starch."
- " 5. "The Family Wash" (Part 2) "Special Washing."
- " 6. Ironing.
- " 7. Muslins, Lace.
- " 8. "Silk" — "Disinfectants."

SEWING:—

- Lesson 1. Equipment, Shirtwaists and Skirts.

PERSONAL HYGIENE:—

- Lesson 1. The Human Machine.
- " 2. The Running of the Machine.
- " 3. Care of the Machine.
- " 4. Proper Attitude of the Body.

SPECIAL PUBLICATIONS

In addition to the foregoing the Publications Branch of the Department produces large editions of various immigration booklets. These are well illustrated throughout and attractively compiled. The text sets forth in a straight-forward manner the resources of the province, its advantages and the general conditions of life within its borders.

Manitoba, The Home of Mixed Farming is a fifty-six-page booklet, profusely illustrated, pointing out just why mixed farming is specially profitable in Manitoba. The booklet is divided into six chapters: Market Conditions, Live Stock in Manitoba, Fodder Crops, Dairy and Poultry Products, Vegetables, Fruits, etc., and a supplementary chapter containing particulars as to climate, living conditions, farm help, homesteads, etc.

Own a Farm of Your Own in Manitoba contains eighty pages and more than one hundred illustrations, and the text dwells upon Manitoba as a grain-growing province. About half the booklet is devoted to a description of the various municipalities of the province, with price of land, homesteads available, and general conditions of soil, towns, railways and other information useful to the incoming settler; all this is assembled under a chapter heading: "Where to Locate in Manitoba" and other chapter titles are: Manitoba Wheat and Other Grain, Agricultural Instruction, Manitoba as a Place to Live, and Manitoba Settlers' Guide with homestead, customs and quarantine regulations, explanation of Survey System, etc.

True Stories of Success in Farming is a smaller booklet of thirty-two pages, a compilation of signed statements from many Manitoba farmers who started with little or no capital and have established themselves as successful agriculturists. The experiences and advice of these men are extremely valuable to the new

settler. How to secure land in Manitoba, how the land is surveyed, homestead regulations in brief, etc., are included in the booklet.

NEWSPAPER ARTICLES

The Publications Branch has charge of all advertising copy and general newspaper and magazine articles on Manitoba. News letters concerning the work of the Department in all its branches and of the Agricultural College, announcements of agricultural events, short courses, etc. are despatched to the press of the province and, if of general interest, to outside papers as well.

A great many photos are loaned in Canada, United States and the Old Country to illustrate articles on Canada.

MAILING LISTS—METHOD OF MAILING

It has been the custom in the past to carry all mailing-lists on a card-index system, addressing envelopes by hand as required for mailing purposes. These lists have been classified according to the various branches of agriculture in which the addressee is known to be specially interested: Animal Husbandry, Poultry, Field Husbandry, etc. A special list is kept for the Extension Department of the Agricultural College, classified according to the various divisions of extension work. At times special lists have been compiled for special bulletins, etc., as when every carpenter and builder in the province received a copy of the bulletin entitled: "Plans for Farm Buildings." The only system of revision which has been

carried out on the card-index system in the past has been to cancel names from the list when mail has come back undelivered.

With the change of government, however, the Publications Branch of the Department has obtained the permission of the Hon. Minister of Agriculture to install an up-to-date system with modern addressing-machines and filing equipment, and at present a comprehensive mailing-list is being prepared. It is hoped to list the name of every resident farmer in the province, together with specific information as to his special agricultural interests, in order that the Department may be in a position to conduct intelligently any educational campaign, placing its propaganda in the hands of every farmer vitally concerned. It is expected that the list when completed will contain between forty and fifty thousand names and addresses.

PUBLICITY

Besides mailing out bulletins and circulars to farmers, the columns of the weekly press have been utilized from time to time to draw attention to various experiments, demonstrations, short courses, meetings, etc. Special reviews of new literature have appeared and many illustrated articles in the agricultural press, which has been ready at all times to co-operate with the Department in disseminating information to the farmers.

Poster advertising has been used in some instances with telling effect as a corollary of lecture tours, better farming excursions, ploughing matches and other provincial events.

SASKATCHEWAN

BY F. H. AULD, ACTING DEPUTY MINISTER OF AGRICULTURE

THE publications of a Department of Agriculture, including reports, bulletins, special reports and newspaper

articles, deal chiefly with agricultural topics, and to be of material benefit to the class of people they are written for, must be distributed

in such a manner that their destination is assured. It has, therefore, been the practice of the Saskatchewan Department of Agriculture to utilise the methods herein described.

PUBLICATIONS

Reports. The department is divided into the following branches: Dairy, Live Stock, Weeds and Seed, Statistics, Bureau of Labour, Co-operative Organization and Game. Each branch issues an annual report dealing with its work, and the report of the Director of Agricultural Extension at the University of Saskatchewan is also published by this department. All these reports together with the report of the Deputy Minister are also published as a complete report.

Bulletins and Leaflets. Bulletins and leaflets are issued by the Department dealing with such subjects as live stock, dairying, poultry, buildings, soil cultivation, farm crops, marketing and household science as well as the provincial statutes respecting agriculture.

Special Publications. Special publications, designed to acquaint farmers and investors with the province and its opportunities, are published from time to time. They are distributed on request, and supplies of these are furnished for distribution from provincial exhibits at fairs outside of Saskatchewan, and from Canadian Emigration offices and British Consular offices in the western United States. The activities of the various departments of the government are described and enumerated in the *Public Service Monthly*, a bulletin which made its first appearance in August of 1912, and has now reached a monthly circulation in excess of 10,000 copies. This bulletin is mailed free on request to the Department.

Newspaper Articles are prepared from time to time by the various branches dealing directly with their individual work. During the crop

season weekly reports are issued to the press containing crop information supplied by our staff of telegraphic correspondents, and at various times during the year the Department's estimates of grain acreage and yield, and the number and condition of live stock are made public in the same way. Each branch of the Department also finds it very essential to the most efficient service to supply the agricultural press and newspapers circulating in Saskatchewan, with press articles outlining plans of work or reporting the results of work accomplished. Special articles are occasionally furnished when circumstances render it possible to do so.

Revision. Constant vigilance is required to keep a mailing list correct. We revise ours by sending a "reply" post card to those on our lists. If within three months the return portion of the card is not received the name is removed from our lists. The mailing list of the *Public Service Monthly* is revised at intervals by asking recipients to write within three months stating their desire to continue to receive the bulletin. At the end of three months from the time the notice is given the *Public Service Monthly* is sent to those only who during the three months' period ask for it.

MAILING LIST

Classification. The mailing list of the department contains about 20,000 names, consisting of members of agricultural societies, bank managers, crop correspondents, newspapers, grain growers' associations, co-operative associations, railway officials and others. The names are classified according to the nature of the publications to be distributed. The subjects are:—Field Crop Production, Live Stock, Dairying, Poultry, Horticulture, Forestry, Crop Bulletins and Statistics. Any name may be added to one or more of these lists and names are entered in our lists upon request.

DISTRIBUTION

Publicity. When a new bulletin is issued by this Department, attention is drawn to it through the press, and persons interested are invited to apply for copies. In December, when farmers have time for reading, we usually insert in the agricultural press an advertisement containing a full list of our bulletins. A coupon appears with the advertisement so that the applicant can indicate the bulletins he desires. Through one advertisement in a few agricultural papers last winter, we received over two thousand applications.

Method of Mailing. The dis-

tribution of the departmental publications is made by the Bureau of Statistics. As this branch of the department compiles and issues statistical information regarding agriculture in the province, it has been found convenient to have our publications mailed from it. We have recently improved our mailing equipment by investing in a motor driven addressing machine. Each name on our mailing list is on a stencil, which considerably facilitates filing and classification, as the stencils are placed in groups under subjects. Envelopes are generally used for bulletins and to a less extent wrappers are used for mailing purposes.

ALBERTA

BY CHARLES S. HOTCHKISS, CHIEF PUBLICITY COMMISSIONER OF ALBERTA

THE Department of Agriculture of Alberta has been seized with the importance and the necessity of promoting practical information in regard to agriculture, and next to our agricultural schools as a medium for disseminating useful information, we believe in placing in every farmer's home special publications giving the latest and best information to date upon all current problems effecting agriculture.

A Publicity Bureau was established in 1910, principally to promote colonization and immigration. This Bureau has since become the medium for the promotion and distribution of all the various publications of the Department as well as exhibits, public announcements, statistics and of labour distribution. This Bureau, therefore, acts as a collecting agency for all the various branches and thus ensures coordination throughout the different departments.

PUBLICATIONS

(a) By annual reports the

responsible officers of branches report the work of the current year as fully as may be to the Deputy Minister.

Annual Report, Department of Agriculture.

Annual Report, Demonstration Farms and Schools of Agriculture.

BULLETINS

(b) In addition to annual reports the various branches issue reports of special investigations, viz.; of scientific and educational character, crop conditions, and other special work.

Crop Bulletin, estimated acreage under crop, and prospects.

Growing Alfalfa.

Growing Potatoes.

Farm Gardening.

Final Report, Grain Crops, and Live Stock.

SPECIAL PUBLICATIONS

(c) Agricultural Credits: Dr. H. M. Tory & Bramley Moore, M.A.

Opportunities in Alberta: Provincial Booklet Series.

Land and Colonization in Alberta.

Live Stock and Mixed Farming in Alberta.

Swine Breeding, Pamphlets 1 to 5, by Provincial Live Stock Commissioner.

Meat Curing on the Farm—Pork; by Provincial Live Stock Commissioner.

Practical Poultry Keeping: By Provincial Poultry Superintendent.

Co-Operative Marketing of Eggs: By Provincial Poultry Superintendent.

Weeds of Alberta: By Chief Weed Inspector.

Studies in our Common Grains.

Sheep in Alberta: By J. McCaig, M.A., LL.B.

Successful Farmers in Alberta.

Peace River Guide.

(d) From time to time the responsible head of branches contribute special articles to magazines and newspapers.

MAILING LISTS

(a) Each branch provides a special mailing list for bulletins and publications issued by their Department; in addition we have

separate lists and stencil plates for banks, newspapers and magazines, game guardians, justices of the peace, agricultural societies, crop correspondents, threshermen, weed inspectors, government officials and a general mailing list.

(b) All wrappers on returned publications are preserved for the stencil clerk to receive immediate cancellation.

DISTRIBUTION

(a) All new publications are announced to the public by means of a press notice which consists of a brief review.

METHOD OF MAILING

(b) All material is delivered to the stencil clerk with instructions as to which lists he shall use, when rapid addressing machinery will be applied.

BRITISH COLUMBIA

BY WM. J. BONAVIA, SECRETARY, DEPARTMENT OF AGRICULTURE

PUBLICATIONS

THE Department of Agriculture has for a number of years followed a well established system of issuing bulletins of instruction regarding the various phases of agricultural industry.

These have been revised and new editions issued from time to time and the range of work constantly extended. These publications are in the form of (1) bulletins, stitched and bound with a cover and generally fully illustrated; and (2) circulars, consisting of a few pages only, without a cover, and few, if any, cuts.

At the present time the Department is issuing bulletins and circulars under the following headings:

(a) *Live Stock and Mixed Farming.* Nine bulletins, including such subjects as The Feeding of Farm

Animals, Control of Tuberculosis, Construction of Silos, Alfalfa, Hog Raising, Boys' and Girls' Field Crop Competitions, and Field Crop Competitions in connection with Farmers' Institutes, etc.

(b) *Poultry.* Five bulletins, including Instructions on Practical Poultry Raising, Natural and Artificial Brooding and Incubation, Care and Marketing of Eggs, Poultry House Construction, Market Poultry, etc.

(c) *Fruits and Vegetables.* Four bulletins, including Farm Storages for Fruits and Vegetables, Instructions for Exhibiting Fruits and Vegetables, Fruit Growing Possibilities of the Skeena River District, and (temporarily out of print) Information for Fruit Growers, being a summary of matured observations

on the suitability of varieties to the different districts and varying conditions met with in the Province.

(d) *Miscellaneous.* Five bulletins, including Guide to Beekeeping, General Information for Apiculturists, Irrigation in B. C. (this being a standard handbook on same), and Agricultural Statistics for the years 1911 and 1913, which include special reports on agricultural conditions in the different sections of the Province, and information on clearing land, wages, labour, etc.

Circulars. These are divided into two main sections, those dealing with horticultural subjects (29 in number) give complete information and instruction with regard to the following: Selection of Orchard Sites and Soils, Orchard Intercrops, Orchard Cultivation and Cover Crops, Planting Plans and Distances, Sprays and Spraying The Control of Fire Blight, Small Fruit and Market Garden Growing on the Coast and Interior Sections, Commercial Onion and Potato Culture, etc., etc.

The other section of departmental circulars (14 in number) deals more with live stock and mixed farming matters, such as Tuberculosis in

Poultry, Seed Improvement, Management of Turkeys and Geese, The Care of Milk and Cream, etc., etc.

In addition to the above publications, the Department issues from time to time annual reports in connection with the activities of the Markets Commissioner, maintained on the Prairies re the marketing of British Columbia fruits and vegetables, and also reports in connection with the following organizations which are affiliated with the Department: Farmers' Institutes, Women's Institutes, Agricultural Fairs, B. C. Dairymen's Association, B. C. Stock Breeders' Association, B. C. Poultry Association, B. C. Fruit Growers' Association and B. C. Entomological Society.

These reports contain a summary of the activities of each association with a report of meetings and annual conventions when held, and almost invariably contain articles of interest by special writers or speakers at the conventions which are worthy of reproduction. A directory of stock breeders and also of poultry breeders is issued and revised from time to time by the Department.

Taking the records for the year 1914, the following new publications were issued by the Department:—

WOMEN'S INSTITUTES

Bulletin 53.	Care of Young Children.	Edition
" 54.	British Columbia Women's Handbook	1,800
		5,000

FARMERS' INSTITUTES

Bulletin 57.	Boys' & Girls' Field Crop Competitions	5,000
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POULTRY

Bulletin 39.	Natural and Artificial Brooding and Incubating, 4th edition	10,000
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GENERAL

Bulletin 58.	Farm Storages for Fruits and Vegetables	5,000
" 59.	Agricultural Statistics for Year 1913	10,000
" 40.	Alfalfa	6,000

REPORTS

Second International Egg-Laying Contest	10,000
Second Annual Report, British Columbia Markets Commissioner	5,000
Twenty-fourth Annual Report, British Columbia Fruit Growers' Association.	1,200
Fourth Annual Report, British Columbia Poultry Association	800
Proceedings of the British Columbia Entomological Society	1,500
British Columbia Dairymen's Report	750

CIRCULARS

	Edition
No. 1. Thousand-headed Kale, 2nd Edition	2,000
" 6. Seed Improvement	9,000
" 7. Keeping Poultry Free from Lice	2,500
" 8. Corn	5,000
" 9. Line Cuts for Poultry Houses	1,000
" 10. Care of Milk and Cream	10,000
" 16. Horticulture Branch, Spray Calendar for 1914	5,000
" 26. Horticulture Branch, Supplement	1,500

MISCELLANEOUS

Secretary's Report, Agricultural Fairs Association	100
Stock Breeders' Directory	1,500
Gardening on a City Lot	5,000
Poultry Breeders' Leaflet	5,000
Rules and Regulations, Farmers' Institutes	8,000

Owing to the large number of bulletins and circulars which are given to callers at the Department who take literature away with them, it is rather difficult to keep a check on the actual total number sent out during the year, but the grand total of 131,675 recorded may be taken as approximately correct.

Not very much publicity work is done by the Department in the way of special newspaper articles. All newspapers in the Province, of course, are furnished with copies of new issues by the Department, and reviews with extracts are generally obtained gratis. The Department, although growing rapidly each year, has felt that the energies of its staff should be entirely employed in getting out on the ground and giving practical demonstrations and instruction work, and, so far, special paid "write-ups" from Department officials in newspapers have not been encouraged.

MAILING LISTS AND DISTRIBUTION

The Department maintains a general mailing list for institutions, public bodies, private persons, etc., who have applied from time to time for a regular supply of department literature. This list at present totals some 400 names and is the one first supplied with new publications when issued.

Members of Farmers' Institutes are also each entitled to a copy of all

department literature as issued from time to time, and at the close of the year 1914 this list included over 8,000 names. Women's Institute membership similarly totalled 2,800 names. The system of mailing adopted is the cutting of a stencilled slip on the Elliott Addressing Machine which is affixed in a metal or fibre frame and then put through an ink roller attachment. These slips are filed in a cabinet and last for a considerable period, being practically indestructible and it is possible to address several thousand envelopes of varying sizes in a day, once the stencils are cut—this being the only part of the work which takes up time. The matter of running the envelopes off, etc., is a simple one.

The British Columbia Fruit Growers' Association have a special mailing list of some eight to nine hundred names for horticultural publications, circulars, etc., whilst the other associations mentioned adopt a similar means of reaching their members for their special reports and notices.

The stencilled names are revised at the commencement of each year from returns received from secretaries of Farmers' and Women's Institutes. It has been found in actual practice that the annual turnover varies as much as forty to fifty per cent in some years. Names on the lists for the British Columbia Fruit Growers' Association, B. C. Poultry Association, B. C. Stock

Breeders' Association, B. C. Dairymen's Association, etc., are automatically cut out at the close of the association year, and are not renewed for the mailing list until the annual membership fee has been sent in to the secretary of the Association, who is an official of the Department in all cases.

In addition to the above mailing list, publicity is obtained for department literature by supplies put in the hands of secretaries of Farmers' and Women's Institutes for local distribution, whilst the Bureau of Provincial Information, a Branch of this Department specially organized for publicity work, also sends out many of these publications in conjunction with those issued from other Departments such as the Lands, Mines, Forest Branch, etc., etc.

It has been sometimes felt that the issue of department bulletins and circulars has been on almost too lavish a scale, and owing to the recent withdrawal of free mailing privileges by the Dominion Government on the majority of provincial

publications, the above system may be considerably modified in the future.

Secretaries of Institutes and local associations will be supplied with the majority of publications in packages for issue locally at meetings or by other means, and the heavy burden of postage on the Department will thus be obviated to a certain extent. Whether the results of the old system will be obtained or not is a matter which remains to be seen.

A Multigraph machine was installed in the Department in 1913 and this, together with a Rotary Neostyle outfit, efficiently handled all the circular letters addressed to Institutes and Associations. During the year 1914, 63,090 circular letters on 227 subjects were mailed being an increase of 98 per cent over the previous year. By these various means, the agricultural communities are kept in close touch with the Department and it is believed that the efficiency of same will bear comparison with the results obtained in older Provinces.

The cheese industry in New Zealand has developed with extraordinary rapidity. For the year ending March 31st, 1905, the export, mainly to Great Britain, was 82,421 cwt. For the year ending on the same date in 1915 the export was 794,779 cwt. These figures represent an increase of 864 per cent in a period of ten years. Another idea of the immense quantity of cheese represented will be realized when it is stated that \$927,240 was required to pay the freight at 1 cent per pound of cheese exported to the British market for the year ending March 31st, 1915. There are no fewer than 327 cheese factories in New Zealand, of which 26 were added last year. As a result of the profitable nature of cheese making, says *The Journal of Agriculture*, the official agricultural publication of New Zealand, many new factories are in course of erection, the majority being provided by dairy companies that have previously been engaged in the manufacture of butter.

NEW VARIETIES OF GRAIN AND FODDER CROPS ORIGINATED IN CANADA

This series of articles is the result of the following letter addressed to the Deputy Minister of Agriculture in each province, by the editor of THE AGRICULTURAL GAZETTE.

The position occupied by "Marquis Wheat," "Manchurian Barley," "O.A.C. No. 72 Oats," "O. A. C. No. 21 Barley," "Quebec Yellow Corn," certain strains of alfalfa and other Canadian varieties of crops, is but an indication of what has been accomplished by scientists in this country in improving the quality of farm crops.

In order to give prominence to these accomplishments I should like to bring together in THE AGRICULTURAL GAZETTE, what each Department of Agriculture has done in this respect with grains and forage crops. Would you, therefore, be good enough to have prepared for me a list of those varieties produced by your Department either by breeding or selection, that have attained a prominent position in Canadian agricultural practice, giving in each case:

- (a) A brief history.
- (b) Characteristics.
- (c) Awards in public contests.
- (d) Yield, as compared with other popular varieties, over a stated number of years.
- (e) Other points of superiority.

NEW BRUNSWICK

BY J. B. DAGGETT, SECRETARY FOR AGRICULTURE

YOURS to hand re wheat, barley, corn and alfalfa. Replying would say that it is only within the last two years that we have attempted to do anything along this line. So far we have not made any experiments that would be worth mentioning in THE GAZETTE with wheat, barley or oats, but we

are attempting to do something with corn and alfalfa.

Last year was our first year in which we went into this in any definite way, but I do not think the experiments have reached a stage where we can give you anything that would be of special interest.

SCHOOL OF AGRICULTURE OF STE. ANNE DE LA POCATIÈRE

BY REV. NOËL PELLETIER, DIRECTOR

NONE of the varieties of wheat, oats or barley, mentioned are grown on this farm. Mr. Savoie has a plot of Marquis wheat, but this experiment has been going on only for a year and no complete data are available.

Alfalfa was tried here some thirty-

six years ago and did not succeed. Another trial, last year, also met with failure. A new sowing was made this year and it is now in a fair condition.

We are now experimenting with Orchard grass, as a means to destroy Couch grass. Orchard grass is a

very strong grower and ten or fifteen days earlier than Couch grass. On account of this earliness, I think it has an advantage over Couch grass. At any rate, I have observed that a handful of Orchard grass seed, sown along a ditch, had crowded out the Couch grass which was growing on the banks. I was encouraged by this observation to plan the experiment which is now being conducted.

As to fodder plants, this is the first year that we have conducted plot experiments with these; some have done well, others not so well.

With regards to vegetables, it may be stated that all the varieties of

mangels grow well in our soils. Three varieties of corn were tested as a field crop this year: Longfellow, Compton and Wisconsin No. 7. there was a good crop of ensilage corn. Of the three the Wisconsin is the earliest and finest; it grew over 9½ feet high. The soil on which this variety has been grown is a little lighter and warmer than the others, which may explain its superiority. No definite conclusions can be given.

Several varieties were planted by Mr. Savoie, but the planting was done so late that no opinion can be formed as to the merit of these varieties.

OKA AGRICULTURAL INSTITUTE

BY BR. JEAN DE LA CROIX, DIRECTOR

THE various experiments conducted last year on Marquis wheat, Manchurian barley and O. A. C. No. 72 oats and Quebec Yellow corn are given herewith in tabular form. The table shows the different species of plants, the dates of sowing and cropping, the yield per arpent. The reader will be enabled to ascertain the relative value of each plant as regards earliness and productivity.

Father Adrien, of Mistassini, has grown the Marquis wheat for a few years and has obtained good results. I am told that he has exhibited some samples of this wheat at certain

county fairs in Lake St. John and won some prizes.

No such results can be shown here for the Marquis wheat. As shown in the table, the yield of this wheat is about twenty-two bushels per arpent. Emmer gives a yield of thirty-eight bushels, but loses in weight what it gains in volume. The average weight of our wheat is 62 pounds per bushel, the weight of the Emmer is only 44 pounds per bushel.

The results shown in this table are computed by arpent; to obtain the yield per acre it is necessary to add 17 per cent to these figures.

EXPERIMENTS AND RESULTS WITH GRAINS AND POTATOES

KIND AND VARIETIES	Date of Sowing	Date of Harvest	Yield Per Arpent
<i>Wheat:</i>			
Emmer.	May 13, 1914	August 18	38 bushels
Marquis.	"	" 14	22 2 "
Perron.	"	" 19	27 "
White Fife.	"	" 19	22.4 "
Red Fife.	"	" 19	19.2 "
Bishop.	"	" 14	21 "
Preston.	"	" 14	20 "
Prelude.	"	" 4	16 6 "
<i>Winter Wheat:</i>			
American Banner.	Sept. 18, 1913	July 20, 1914	40 bushels
Michigan Ambré.	"	"	29 "
Winter King	"	"	33.2 "
<i>Rye:</i>			
Printannier.	May 16, 1914	August 11	19.9 bushels
<i>Barley:</i>			
Black (Hulless)	May 18 1914	August 22	21 "
White.	"	" 19	25 "
Odessa	"	" 20	35 2 "
Canadian Thorpe.	"	" 24	27 1 "
Mensury	"	" 19	30 3 "
O. A. C. 21	"	" 19	29 "
Mandscheuri	"	" 20	26 "
<i>Oats:</i>			
\$1,000	May 18, 1914	Sept. 2	41 bushels
Tartar King.	"	August 31	43 9 "
Banner	"	" 22	61 8 "
Sensation	"	Sept. 1	42 "
Ligowo.	"	August 31	40 8 "
Golden Rain.	"	Sept. 1	31 8 "
Daubeney	"	August 12	52 "
Excelsior.	"	" 28	23 "
<i>Corn:</i>			
"Petit sucré"	May 23, 1914	Sept. 23	5,485 pds. Spikes
Mestodon	"	Oct. 13	24,485 " Total
Yellow Canadian	"	" 17	26,800 " "
Longfellow	"	" 16	33,800 " "
Leaming	"	" 16	31,800 " "
<i>Peas:</i>			
Canadian Beauty	May 19, 1914	August 29	22 5 bushels
Vigne dorée	"	" 29	20.4 "
Arthur	"	" 29	27 "
Prussian Blue.	"	" 29	18 5 "
<i>Potatoes:</i>			
Early Rose	May 23, 1914	Sept. 24	287 "
Rose Central.	"	Oct. 16	338 "
Carman.	"	" 16	278 "
Irish Cobbler.	"	" 16	281 "
Dakota	"	" 15	304 "
Vermont	"	" 15	355 "
Prolific	"	" 14	329 "
Green Mountain	"	Sept. 9	342 "

Inoculated alfalfa has given 4.2 tons per acre, while non-inoculated alfalfa has given a little less than 4 tons.

ONTARIO AGRICULTURAL COLLEGE

BY C. A. ZAVITZ, B.S.A., PROFESSOR OF FIELD HUSBANDRY

ABOUT twenty-five hundred named varieties of farm crops have been carefully grown and tested at the Ontario Agricultural College. These have included the various Canadian sorts and many kinds imported from different countries. Some of those which gave the best results in the variety tests have been improved by mass and by seed selections. New varieties of special promise have been started from individual plants and others have been originated by hybridization.

Choice seed of some of the leading varieties of farm crops has been distributed throughout the Province each year through the medium of the Ontario Agricultural and Experimental Union. There are now about five thousand co-operative experimenters, and the varieties are tested under a definite plan and with much care and accuracy. Those which gave the best satisfaction, in the co-operative tests, have been increased and are grown as regular crops on the farms.

The Ontario Agricultural College has done much in introducing throughout Ontario many of the leading varieties of farm crops now grown more or less extensively by the farmers of the Province. The names of some of these varieties are as follows: Mandscheuri and O. A. C. No. 21 barley, Siberian, O. A. C. No. 72 and O. A. C. No. 3 oats, Dawson's Golden Chaff and Imperial Amber winter wheat, Rye buckwheat, Common emmer, Mammoth White winter rye, O. A. C. No. 61 spring rye, Early Britain and New Canadian Beauty peas, Pearce's Improved Tree beans, Early Yellow soy beans, Hairy vetches, Salzer's North Dakota flint corn, Golden Bantam sweet corn, Yellow Leviathan mangels, Early Amber

sorghum, Empire State, Extra Early Eureka, Davies' Warrior potatoes, and Ontario Variegated and Grimm alfalfas.

Some of the varieties started at the College have been of decided advantage to the agriculture of this Province and of other places outside of Ontario. This article will be confined to comparatively few of the varieties here mentioned.

MANDSCHEURI BARLEY

In the spring of 1889 the Ontario Agricultural College imported forty-eight varieties of barley from England, Scotland, France, Russia, Germany, Sweden, Italy and Hungary. The Mandscheuri was one of the varieties imported from Russia at that time and was tested at the College with numerous other varieties in 1889 for the first time. It has now been grown in the plots at the College for twenty-seven years in succession.

The Mandscheuri barley has a stiff straw of medium length, a six-rowed bearded head, and grain of medium size, comparatively thin in the hull, fairly plump, and which usually weighs about fifty pounds per measured bushel. It has been a heavy yielder and a very popular variety throughout Ontario.

The great majority of prizes at the leading exhibitions and in the Field Crop Competitions of Ontario were awarded to the Mandscheuri variety of barley from the years 1900 to 1910. During the past five years the prizes have gone largely to the O. A. C. No. 21 variety.

In average yield of grain in the experiments conducted at the College for the twenty-five years from 1890 to 1914, inclusive, the Mandscheuri, in comparison with the Common Six-rowed variety, gave the following results:

Mandscheuri . . . 69.3 bushels per acre
Common Six-rowed. . 59.2

The Mandscheuri, therefore, surpassed the Common Six-rowed variety by an average of fully ten bushels per acre per annum for the whole period of twenty-five years. For eighteen years in succession the Mandscheuri barley was distributed to farmers throughout Ontario for co-operative experiments, and previous to 1906, when the O. A. C. No. 21 barley was introduced, it was the largest yielder and decidedly the most popular variety of barley in Ontario.

The Mandscheuri barley displaced practically all other varieties in Ontario previous to the introduction of the O. A. C. No. 21 variety.

In 1904 these lots were sown separately in rows, and these rows were carefully examined and the most promising ones were harvested and threshed. From that time forward only the best strains were grown in the test as follows: 14 in 1905, 8 in 1906, 7 in 1907, and 3 in each of the past eight years. During the first year the different strains were designated by separate numbers, and the one which proved to be the best is now known as the O. A. C. No. 21.

The O. A. C. No. 21 barley possesses a good length of straw which is particularly strong in comparison with most other varieties. The heads possess six rows of grain and are bearded. The grain is white on the outside, but is of a bluish colour immediately under the



O. A. C. No. 21 BARLEY

O. A. C. NO. 21 BARLEY

In the spring of 1903 selected grains of the Mandscheuri barley were planted by hand at equal distances apart in the Experimental Department of the College. These grains numbered between nine and ten thousand. This method gave an opportunity for each plant to show its individuality. When the plants were ripe they were carefully examined and thirty-three of the most desirable ones were selected, harvested and threshed separately.

hull. The crop has been comparatively free from rust. The weight of the grain per measured bushel has been somewhat over the standard and the yield per acre has been heavy.

In the Field Crop Competitions in Ontario in 1910, no fields of the O. A. C. No. 21 variety were yet entered, and all prizes went to the Mandscheuri barley. In 1914, however, there were in all two hundred and seventeen fields of barley entered in competition. Of

this number one hundred and seventy-two were O. A. C. No. 21, twenty-eight were Mandscheuri, eleven were other varieties, and six were unnamed. In this competition 91 per cent of the prizes went to the O. A. C. No. 21. Within the past two or three years in the grain competitions held in connection with the Canadian National Exhibition at Toronto, the Provincial Winter Fair at Guelph, the Eastern Winter Fair at Ottawa and Brockville, and other leading exhibitions, the O. A. C. No. 21 variety of barley received a great majority of the prizes as against all other varieties.

In the experiments at the College in each of the past few years the following yields in bushels of grain per acre have been obtained:

VARIETIES	1911	1912	1913	1914
Mandscheuri. . .	37 6	47.8	41 8	67 4
O. A. C. No. 21. .	38 4	49 6	47 5	71 8

In the co-operative experiments throughout Ontario the O. A. C. No. 21 surpassed the Mandscheuri in yield of grain per acre in fully 75 per cent of the tests, and was the most popular variety with the experimenters.

It is now estimated that about 96 per cent of all the barley which is grown in Ontario belongs to the Mandscheuri, or the O. A. C. No. 21 varieties. According to the report of the Bureau of Industries for Ontario the yield of barley per acre for the past sixteen years, as compared with the sixteen years previous, has had an increase of about 23 per cent. This increase in yield per acre throughout Ontario for the last period, as compared with the first period of sixteen years, would amount to about thirty-five million dollars, or sufficient to maintain the Ontario Agricultural College at its present cost of maintenance for approximately one hundred and ninety years.

SIBERIAN OATS

Over one hundred varieties of oats were tested for the first time at the College in 1889. These varieties were obtained from many sources. Amongst the number was the Siberian variety of oats secured from Russia, through an English seed firm. This variety has been grown at the College continuously for upwards of twenty-five years.

The Siberian variety of oats possesses a medium length of straw of fairly good strength, a spreading head with a bright silvery chaff, and a white grain which usually weighs about the standard weight of thirty-four pounds per measured bushel. The grain is of very good quality, the hull being somewhat lighter than that of a number of the other varieties. The Siberian is a little later than medium in maturing.

In the experiments at the Ontario Agricultural College and throughout the Province the Siberian variety of oats has made a good record, and in recent years it has been the second most extensively grown variety in the Province according to reports from farmers.

O. A. C. NO. 72 OATS

About ten thousand grains of the Siberian oats were planted separately at equal distances apart in a large nursery plot in 1903. This gave the separate plants an opportunity for development under fairly uniform conditions. At the proper time the plants were carefully examined and those which presented the most desirable characteristics were harvested separately and carefully stored. The selected plants were afterwards given a more critical examination in the Plant Breeding Laboratory, and those possessing the largest amount of the best seed were retained for future work. In the spring of 1904, a certain number of the seeds from each of the plants were sown by hand in separate rows,

which furnished an opportunity for a study of the characteristics of the progeny of the individual plants. A critical study was made of these different strains and only the best were continued in the test. From the seed obtained in the rows, plots were sown and the crops were compared with other selections, hybrids, and varieties. As a result of this careful investigation it was found that what is called the O. A. C. No. 72 seemed to possess the greatest combination of the most desirable characters. This variety has made a most excellent record.

field crop competitions in Ontario. This was in Simcoe County, and it took first prize in a competition with nine other fields. In 1914 no less than one thousand nine hundred and ten (1910) fields of oats were entered in competition in the various agricultural societies, of which there were at least ten entries in each society. Of this number sixty-five fields were the O. A. C. No. 72 variety. It is interesting to note that fifty of these fields took prizes, twenty-two being firsts, and eleven being seconds. No variety of oats has made as fine a record as the O. A. C.



O. A. C. No. 72 OATS

The O. A. C. No. 72 variety of oats produces a long vigorous straw which is stronger than that of many of the other varieties of oats. The head is spreading in its habit of growth and the chaff has a slightly pinkish colour. The grain is white with a slightly pinkish cast, and usually weighs a little over the standard of thirty-four pounds per measured bushel. The grain is of better quality than that of most other varieties of oats, possessing only about 27 per cent of hull. The yield of straw is good, and the yield of grain per acre has been exceptionally high.

In 1913 only one field of the O. A. C. No. 72 oats was entered in the

No. 72 since the field crop competitions were started in Ontario in 1907.

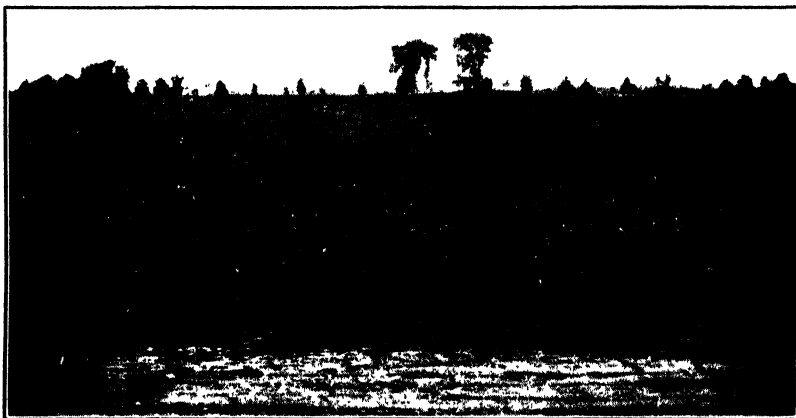
The O. A. C. No. 72 variety of oats has been tested in the experimental plots in each of the past eight years. The following gives the comparative yield in bushels of grain per acre of the O. A. C. No. 72, and of the Banner variety of oats in each of the past eight years:

YEARS	Banner	O. A. C. No. 72
1907 . . .	65 9	76 4
1908 . . .	83 5	86 8
1909 . . .	70.4	102 9
1910	73.6	93 6
1911	30.4	44 0
1912	73 4	114 1
1913	74.4	105.7
1914	88.0	88 5

In the average of the eight year period the O. A. C. No. 72 produced 2.2 and the Banner 1.9 tons of straw per acre, and the former had 27.5 per cent and the latter 30.4 per cent of hull in the grain. The two varieties mature at practically the same time. These results show that the O. A. C. No. 72 surpassed the Banner not only in quality of grain but by an average of practically nineteen bushels of grain per acre per annum for the eight year period. In the co-operative experiments throughout Ontario the O. A. C. No. 72 has surpassed in yield per acre each of the other varieties with which it has been tested throughout the province.

plants which apparently combined the most desirable characteristics. These were carefully tested out and the oat now designated as O. A. C. No. 3 is the one which has made the highest record.

The O. A. C. No. 3 variety of oats is exceptionally early, being about ten days earlier than either the Banner or the O. A. C. No. 72 varieties. It possesses a medium length of straw which is of fair strength. The head is spreading, the grain is white, of medium length, and of fair weight per measured bushel. The percentage of hull is lighter than that of any one of fully three hundred named varieties of oats which have been



O. A. C. No. 3 OATS

The value of the oat crop in Ontario now amounts to about forty million dollars annually. It is difficult to estimate the influence which the O. A. C. No. 72 oats will probably exert on the value of the oat crop of the province as it becomes more generally grown by the farmers of Ontario.

O. A. C. NO. 3 OATS

The O. A. C. No. 3 variety of oats originated from a single plant selected from the regular variety plot of the Daubeney oats in 1904. The writer at that time selected a number of

secured from different sources and which have been carefully tested at the College. The yield, as an early oat, has been comparatively heavy.

It is not likely that the O. A. C. No. 3 variety will become prominent in the field crop competitions or in the grain contests at the exhibitions. It is an oat of rare quality, but as the grains are somewhat slender, it will probably not win in many grain competitions.

In the average results of experiments at the college for a period of eight years the O. A. C. No. 3 has given a yield of 83 bushels per acre

in comparison with 74.8 produced by the Daubeney, which is one of the most prominent early maturing varieties. In percentage of hull the O. A. C. No. 3 is lower than that of three hundred varieties of oats which have been obtained from different sources and which have been carefully tested in the experimental grounds of the college.

The O. A. C. No. 3 variety of oats is particularly suitable for mixing with the O. A. C. No. 21 variety of barley when it is desired to grow the two grains in combination. A mixture of one bushel of each by weight has given very satisfactory results. In the experiments conducted at the

college it has been ascertained that suitable varieties of oats and barley combined in the right proportions will give a yield of fully two hundred pounds of grain per acre more than either one when grown separately.

Probably sufficient has been said to show that it is possible to greatly improve the crop production of a country by the introduction of superior varieties which will yield heavily and produce crops of high quality. But few people realize the great improvements which can be secured by sowing the very best seed of the best varieties. It is still true that good seed is at the very foundation of successful agriculture.

UNIVERSITY OF SASKATCHEWAN

BY JOHN BRACKEN, B.S.A., PROFESSOR OF FIELD HUSBANDRY

THE work of crop improvement by selection and breeding has been under way at the University but a short time, with the result that no new varieties have yet been distributed from this institution. Much selection and breeding work with all the commonly grown crops is however under way, and improved strains will be made available as soon as the best have demonstrated their fitness over a period of years in our trial grounds at Saskatoon.

A considerable proportion of the Saskatchewan crop is produced from seed that has not received the benefit of pure line or even mass selection, and much of it comes from seed that has been brought in from many different outside sources, and is as a result very often ill-suited to our soil and climate. Yet it should be pointed out that an enormous acreage is seeded every year to improved strains, most of which are ped greed, that have come to us from agronomists in other provinces or adjoining states. Most of the prominent pedi-

greed sorts now used have been produced by the Dominion Department at Ottawa, but some have come to us from Guelph, some from the state experiment stations of Minnesota and North Dakota, while others have been developed in Sweden.

Since outside breeders have given us most of our prominent sorts, and it is the editor's desire to summarize the effect of their efforts not only under their own local conditions, but in other provinces as well, it will be the object of this brief article to name the leading varieties now being used by Saskatchewan farmers, to indicate their origin, and to point out the merits and demerits of each under the particular soil and climatic conditions that exist here.

WHEAT

LEADING VARIETIES. *Red Fife*, *Marquis*, *Pioneer*, *Prelude*, *Buffum's No. 17*.

Red Fife—the old standard variety, introduced in the early days

from Ontario is a high yielding, high quality wheat, rather long in the straw and late in maturing. Many strains of this variety have been tested out, but to date few have proven superior to the parent in all desirable characters. This wheat is used extensively in South-Western Saskatchewan, as well as on the light soil types in the southern and central parts of the province. It is well suited to the dry areas in the south west, and for use on stubble as well as on fall or spring ploughing on the lighter soil types in central and western Saskatchewan. Red Fife is a bald wheat, but produces a few short awns. Its chief fault is in its late maturity. It suffers less from spring frosts than Marquis, but shatters more readily. The chaff is light amber in colour.

Early Red Fife—produced by Dr. Saunders is a pedigreed sort out of Red Fife. It is not essentially different from the parent, but is considerably earlier, and under moist conditions more subject to rust.

Smith's Red Fife—from a plant selection made by Geo. L. Smith of Saskatoon is also out of Red Fife. It is almost identical in habit to Early Red Fife, being about one week earlier than Red Fife and somewhat subject to rust.

Dash's Red Fife—a strain from Red Fife produced through mass selection over a number of years by F. J. Dash of Hillesden, Saskatchewan. It is but little earlier than its parent, but has proven rather more productive in our trial plots at Saskatoon.

Marquis—a high yielding, high quality wheat, rather short in the straw and early in maturing, the result of a cross between Hard Red Indian wheat and Red Fife. It was developed by Dr. Charles Saunders at Ottawa from a cross made by his brother. Marquis is well suited to the climatic and soil conditions obtaining in all except the lighter

soils and drier areas of Saskatchewan. At Saskatoon this variety produced on an average one-half bushel per acre less than Red Fife, but more than made this up in quality. At other points in the province it has given larger yields than its parent and chief rival. In general appearance it is not unlike Red Fife. The spike is a little shorter and broader, the seed darker in colour and heavier per measured bushel.

Marquis won the world's championship at New York four years ago, and has since taken the premium award at the Dry Farming Congress on two occasions, and has won several provincial championships in addition to numerous firsts at smaller local shows.

This variety is rather less subject to shattering than the other common sorts now used. It seems to suffer more from late spring frosts than Red Fife, and under some conditions the quality is injured by fall frosts more than it is in Red Fife. In spite of these objections Marquis wheat may fairly be regarded as the greatest contribution of science to the agriculture of Northern Saskatchewan.

Pioneer—is an early long strawed sort, produced by Dr. Saunders. It is earlier than Marquis and longer in the straw than Prelude. It yields less than the former but more than the latter, is high in milling value, of good appearance, and has high weight per measured bushel. It has a bearded head and a red glutinous seed. It is a good wheat for all regions where earliness and fair length of straw is desired.

Prelude—also developed by Dr. Saunders, is a wheat of high quality and low yield. It is ten days or more earlier than Marquis, and considerably shorter in the straw. It is much more subject to loss from shattering than either Red Fife or Marquis. At Saskatoon the yield is about two-thirds as much as Red Fife. This variety may be found

satisfactory in regions north of the present wheat growing area, but on account of its low yield it is not worthy of a place in districts where Marquis matures.

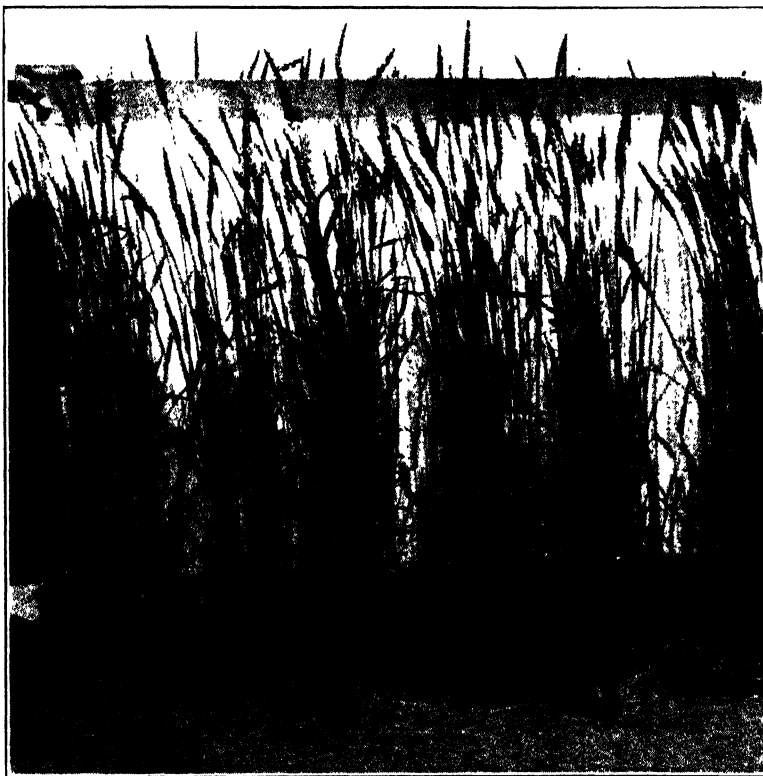
Buffum's No. 17 Winter Wheat—Winter wheat is grown to a very limited extent in Saskatchewan. It is not a safe crop except in a small area in north eastern Saskatchewan. Our experience at Saskatoon suggests

winter last year when three other of our hardiest varieties were completely killed out.

OATS

Leading Varieties:--Banner, Victory, Abundance, Gold Rain.

Banner—The standard oat of Western Canada, has been improved by mass selection by operating mem-



BUFFUM'S No. 17 WINTER WHEAT, SASKATOON, SASKATCHEWAN

that Buffum's No. 17, a strain developed by Buffum in Wyoming at a very high altitude, has proven more hardy than any of the varieties so far secured from the winter wheat regions of northern Manitoba, Alberta and Russia. Buffum's No. 17 is a bald wheat having a light coloured chaff and a hard red berry. It is reported to be a mutant arising from Turkey Red. It lived through the

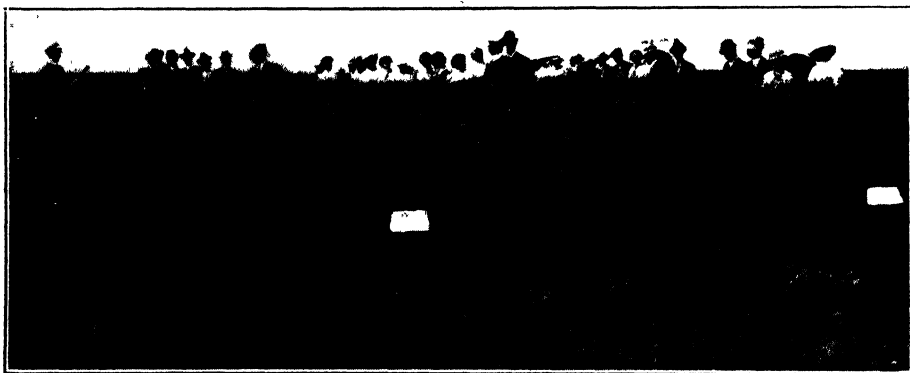
bers of the Canadian Seed Growers' Association. No pedigreed strains have yet been developed to take its place. Banner is a fine but strong strawed variety. The grain as compared with that of other late maturing sorts is long and thin and carries a low percentage of hull. It is not an oat that appeals to the eye, but one that gives high yields under many varying conditions. It is a rather

late white oat having a branching panicle.

Victory—In Saskatchewan this is a rather late oat having a branching panicle, and rather short plump light coloured kernels. It is the heaviest yielding variety at Saskatoon. The only objectionable feature observed in this oat is a tendency to throw false wild oats. For this reason it has not been encouraged to the extent it might otherwise have been. *Victory* was produced by the Svalof Plant Breeding Station in Sweden and was introduced to this country at about the same time by the Canadian Seed Growers' Association and a commercial seed house.

years it has won more prizes than all other varieties combined. Its success has been largely due to its heavy bushel weight, and to the fact that when first introduced it was practically free from noxious impurities.

Gold Rain—Gold Rain is a medium early yellow oat, having a rather small grain, which carries very little hull. This variety is likely to become popular in those parts of the province where early fall frosts are feared. On account of its colour it is not so popular with the millers as some of the white sorts. Gold Rain matures on an average about five days before Banner, and the average yield is but very little less. This is



NORTH DAKOTA No. 959 WINTER RYE—NATURE STUDY CLASS, SASKATOON, SASK.

Abundance—is another late maturing oat having a branching panicle. It produces a short plump kernel of high weight per measured bushel. The seed of this variety carries a slightly greater percentage of hull than either that of Banner or *Victory*. It is a popular variety, and an excellent appearing oat, but the average yield with us is twelve bushels per acre less than Banner, and thirteen bushels less than *Victory*. This oat in its present form was developed by the Garten Seed Company in England. On account of its plumpness and heavy weight per measured bushel *Abundance* has been perhaps the most popular show oat in Western Canada. During the last half dozen

a pedigreed sort produced at Svalof, Sweden. It too has a branching panicle.

BARLEY

Leading Varieties:—O. A. C. No. 21, *Manchurian*, *Hannchen*.

O. A. C. No. 21—this six-rowed bearded barley, developed by Professor Zavitz at Guelph, is one of the most prominent varieties at Saskatoon. Under our conditions it is a heavy producer, fairly strong in the straw, and well suited for general use.

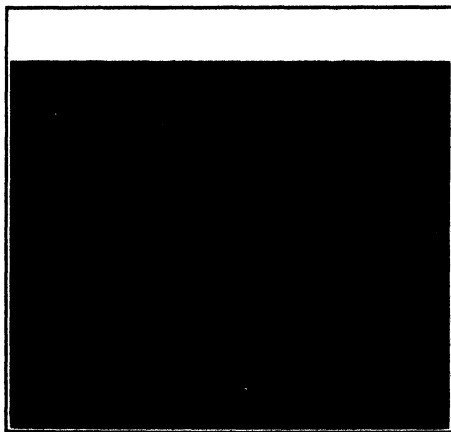
Manchurian—a pedigreed sort of the six-rowed bearded type developed from Mensury by Dr. Charles Saunders at Ottawa. According to our

tests it rivals O. A. C. No. 21 for first place, and is not different in behavior. The seed is light coloured while that of O. A. C. No. 21 is of a bluish tinge.

Hannchen--the heaviest producing two-rowed bearded barley that has been grown here. This barley was developed at Svalof and belongs to the chevalier type. It far exceeds all other two-rowed varieties in yield at Saskatoon.

WINTER RYE

N. D. No. 959--This strain of winter rye was produced by the North Dakota experimental station, and has proven itself rather hardier than our hardiest strain. It is slightly shorter in the straw than the commonly grown sort called Saskatchewan Rye, but does not differ from it in other respects. It has proven perfectly hardy at Saskatoon.



PREMOST FLAX

FLAX

Premost or Minnesota No. 25--is perhaps the best known strain of the short strawed, brown seeded, purple blossomed flax now used in the province. It was developed as the name indicates by the Minnesota experiment station.

Several other good varieties have been produced by the North Dakota station, some of which are bred to

resist flax wilt. None of these have been tested out sufficiently in this province to warrant us recommending any specific one. There is little doubt but that many of them resist flax wilt to a considerable degree. In the absence of this disease they do not appear to be as productive as Premost.

PEAS

Solo--a rather late maturing, heavy foliaged pea, having purple blossoms and producing rather light coloured speckled seeds. One of the most promising sorts for our conditions. This variety was also developed at Svalof and introduced here by the Canadian Seed Growers' Association.

Arthur--a strain improved by the Dominion Cerealists. It is considerably earlier than Solo, and for this reason more suitable for growing in a mixture with oats for forage. This is a medium sized round pea which produces white blossoms and light yellow seeds.

CORN

Quebec Yellow--this is one of the earliest strains of flint corns now being used in this province. It is suitable for hogging off purposes in the south-west. On account of its low yield of forage it cannot be recommended for silage purposes. This sort was developed by the Cereal Husbandry Department at Macdonald college.

North Western Dent--one of the earliest dent corns. It is being grown perhaps more widely than any other single variety in Saskatchewan. It gives a good yield of fodder, and under favourable conditions produces a considerable quantity of ears. It seldom ripens except in the most favourable seasons. This is a good leafy sort and one that should be encouraged in all parts of the province. It was developed by the North Dakota experiment station.

Space does not permit reference to several other less well known but very prominent sorts.

ROOTS

Some varieties of Swedes and Mangels that have been produced in Eastern Canada are now being tried out here. Our tests have not been continued long enough to give positive information concerning the value of these at the present time.

LEGUMES AND FORAGE PLANTS

No grasses, or biennial or perennial legumes that have been produced by any experiment station have been tested here. But it should perhaps be mentioned that among the many mixed races under observation Grimm's Alfalfa, which developed as the result of constant natural selection of hardy plants during a period of fifty years in North Central Minnesota, is quite hardy here.

THE WORK OF THE CANADIAN SEED GROWERS' ASSOCIATION IN IMPROVING AND POPULARIZING CANADIAN VARIETIES OF FIELD CROPS

BY L. H. NEWMAN, B.S.A., SECRETARY

WHEN the Canadian Seed Growers' Association was organized (1904) the main varieties of field crops available were for the most part composite in character, that is they consisted of different strains of varying practical values. Realizing this fact, the directors of the Association adopted a certain system of selection by means of which it was hoped that definite improvement might be effected. The system adopted was the ordinary system of "continuous mass-selection", which required that selections of typical heads from strong vigorous plants be made each year, and that the seed so obtained from such heads be sown by itself on a special area called a "Hand-Selected Seed Plot." By means of this system of continuous separation and inclusion there have been produced in Canada improved varieties of wheat, barley, oats, potatoes and corn. Thus in Western Canada one of the best strains of Banner oats is that grown by Dow Brothers of Gilbert Plains, Manitoba. These men from the very beginning of the Association's activities have taken a keen interest in the work, and by persistent effort have certainly improved upon the

Banner variety with which they started. Their work with Red Fife wheat has also been almost equally successful. In Eastern Canada the strain of Banner oats, which is everywhere proving superior, is known as "Waugh's Banner". This strain has been produced by Mr. Thomas Waugh of North Bedeque, Prince Edward Island, who, like Dow Brothers, has carried on very carefully the work of the Association from its inception. At the present time a very large percentage of the Banner oats grown in Prince Edward Island comes from Waugh's stock.

In wheat we have a type of Red Fife produced by Robert MacKay of Millville, N. S., which has stood out prominently for high yield, quality and purity. In Ontario a lot of exceedingly valuable work has been done by members of the Association, although, as is usually the case with this sort of work, these accomplishments have been achieved very largely in the dark. In autumn wheat for instance, Dawson's Golden Chaff, as re-selected and propagated by C. R. Gies of Heidelberg, Ont., after many years of careful work, has proven a specially productive sort and much of the wheat grown

in the best Centres in the Province has come from this stock. Excellent work has also been done with oats, potatoes and corn, and in many districts one finds, on questioning the growers, that their crops have originated from stock produced by some member of the Association.

Space will not permit further enumeration of the various strains or types which mark an improvement over the original varieties worked with by members. Suffice it to say that improvement of immense value to the country has been made, and that the improved stocks are now being propagated and distributed on a large scale throughout Canada. At the present time the Association is not so much concerned in the *improvement* of varieties in the case of cereals as it is in the propagation and distribution of already improved strains. This is due largely to the fact that there are now available at our leading experimental stations "pure lines" or strains of most of our leading varieties, and that these breed relatively true from generation to generation. This being the case, there is not the same need for our members to concern themselves in trying to effect actual improvements in their seed. On the other hand, they are in a position to render an immense service to the country by propagating and distributing these improved strains in such a way that their quality and purity may be maintained and their identity preserved. This they are

now endeavouring to do on a substantial scale under expert direction and control.

In the case of crops which naturally cross-fertilize, such as corn, clover, roots and vegetables, and also in the case of such crops as potatoes, which respond fairly readily to selection, there are still excellent opportunities for individual members throughout the country to effect improvement. At the present time a goodly number of members are seeking to improve their varieties of these particular crops by means of the system adopted by the Association, but there is room for a great many more. In fact it is exceedingly desirable that as many men as possible take up selection work with these crops in their respective districts. Varieties or strains of such crops, when bred in a given district, are likely to be best suited to that district. All farmers, who wish to do something along this line, are invited to affiliate themselves with the Association, in order that they may receive direction and encouragement. As is now generally known, seed produced by members according to the regulations of the Association may be accepted for registration, and may receive a certificate which is equivalent to the pedigree issued in the case of live stock.

Persons desiring to become members may communicate with the Secretary of the Canadian Seed Growers' Association, Canadian Building, Ottawa, Ontario.

In these dark troublesome times it is only too evident what our duties are towards our country. We cannot all give our men—our sons—our nearest and dearest to fight for us, neither can we all go to the front as nurses, but we can all deny ourselves by giving our time, our energy, our money to care for those left behind, to provide comforts and even necessities for those who are giving their lives for their country.—*Mrs. K. Portsmouth, Mission City, B.C., in Women's Institute prize essay.*

NEW BRUNSWICK

WOMEN'S INSTITUTES CONVENTION

THE third annual convention of the Women's Institutes of New Brunswick was held in Fredericton on October 5, 6 and 7. Upwards of 90 delegates representing branches of the main organization were in attendance. An address of welcome was delivered by Mrs. J. J. Colter of Fredericton. Mrs. James Porter of Andover in replying to the address stated that "four years ago last June, the first Institute in New Brunswick was organized, with a membership of fifteen and one honorary member; since that time 78 well organized Institutes are scattered all over the province." Mrs. Porter also expressed the hope that ere long the three Maritime Provinces would unite in a grand annual convention, and offered a few suggestions regarding this matter, among them being the following: exchange of methods, plans and ideas, and the adoption of a wide-humane platform embracing Work, Health, Happiness, Duty, Human Service, Brotherhood, Equal Suffrage, Peace through arbitration, and no war of aggression unless by popular vote of all classes, including women.

THE REPORT OF THE SUPERVISOR

Miss Hazel E. Winter, Supervisor of Women's Institutes in the province, in presenting her report pointed out in the following manner the many ways the Institutes had been helpful to the mothers and daughters of New Brunswick homes: "Through the medium of papers and discussions on labour-saving devices, household problems, keeping household accounts, art in the home, the importance of pure air, and many

other papers bearing just such helpful titles, the drudgery of housework has vanished, and the results are well regulated homes where the arrangement and furnishings are for the convenience and comfort of the dwellers, and the atmosphere upon entering the threshold is a healthy and cheerful one." Miss Winter then gave the following review of the early history and the year's work of the Institutes: "In 1912, New Brunswick had 25 Institutes. In 1913, the number had increased to 40, with 49 representatives at the first annual gathering. In 1914, the number of Institutes totalled 60, with an attendance of 81 delegates at the second convention. To-day we are proud of the 78 Institutes, with a membership of 2,500, actively engaged in the work, and we have almost twice as many delegates assembled together this year as last.

"I wish I had time to enumerate the long list of garments and articles sent overseas by our Institutes, but I can only give the word that 2,650 pairs of socks head a long list of donations to the boys who are fighting our battles as well as their own.

"In money, our branches have contributed \$5,600 to the patriotic, hospital ship and Belgian relief funds, and nine of the Institutes have endowed sixteen cots in the overseas Canadian hospitals.

"When requested to collect or raise money for a motor-ambulance, the members showed true patriotic spirit by going to work with a will. By means of a "Button-Day", and in various other ways, the sum of \$2,073.07 was raised, \$345.50 going to the Soldiers' Socks Fund and \$1,609.50 towards the ambulance.

The ambulance bears the inscription, "New Brunswick Women's Institutes", and is now on its way to France. We still have over one hundred dollars in the bank which will, no doubt, be added to the \$115.25 now on hand for the Soldiers' Disablement Fund.

"It seems perfectly wonderful the variety of schemes to increase the Institute treasury. By means of suppers, food sales, birthday parties, chain teas, plays, tag days, strawberry festivals, pay picnics, auto-graph quilts, mite boxes and emergency collections, large sums of money have been raised, only to be expended in some worthy cause. Improvements have been put on public halls, rooms have been remodelled and furnished for the use of the Institutes, prizes have been awarded in the different departments in the schools, new cushions have replaced old ones in school vans, hardwood floors have been laid in school houses, drinking fountains, flag-poles, pictures, blinds and new paints have made the schools more sanitary and cheerful for teachers and pupils, prizes have been awarded at county fairs, libraries have been increased, lights added to the town for the safety and comfort of the residents, and "clean-up" days have added to the attractiveness of the communities and the progressiveness of the citizens.

"There has been considerable 'visiting' and exchanging of programmes among the Institutes. The social element is more deeply imbedded. A more general co-opera-

tion on the part of town and country women has been strengthened; each is giving to the other her sympathy and support and finding qualities never dreamed of, which were lying dormant, but through the Women's Institute have come to life. More Institutes are preparing their programmes ahead for six months or for the entire year; the printed programme is more in evidence; the variety of subjects has increased, children's, girls', grandmothers' and men's meetings are occurring frequently on the programme, and patriotic subjects are receiving more attention. The roll-call has developed from an entertaining to an educational feature of the monthly meeting."

Addresses were also delivered by the Hon. G. J. Clarke, Premier of New Brunswick; Mrs. Laura Rose Stephen, of Huntingdon, Que., on the subjects of "Patriotism and Production relating to the Home", "The Work of Women's Institutes", and the "Influence of Environment"; Mrs. G. C. Vanwart of Fredericton on "Comforts for Soldiers"; Dr. H. V. B. Bridges, principal of the Provincial Normal School, on "Books and Pictures in the Child's Education"; R. P. Steeves, Director of Elementary Agricultural Education, on "The School Garden". Illustrated addresses were given by Dr. Townsend of the Riverglade Sanitarium on "Tuberculosis" and by Mr. Wm. McIntosh, Provincial Entomologist on "Household Pests", while Miss Annie Martin of Fredericton gave a practical dressmaking demonstration.

The annual convention of the Ontario Beekeepers' Association will be held at the Hotel Carls-Rite, Toronto, on November 23rd, 24th and 25th, 1915. A lengthy programme has been prepared which will include papers and addresses by Morley Pettit, Provincial Apiarist for Ontario; Dr. E. F. Phillips, in charge of Bee Culture Investigations, U. S. Department of Agriculture, Washington, D.C.; F. W. L. Sladen, Dominion Apiculturist, and many other well-known beekeepers.

NOVA SCOTIA

INSTRUCTORS AT COLLEGE OF AGRICULTURE

INTERIM instructors have been engaged by the College of Agriculture to carry on the work of those members of the faculty and assistants who have enlisted. Mr. W. R. Reek, B.S.A., Director of Agricultural Education for P.E.I. will conduct the classes in Surveying and Land Drainage, during the absence of Professor B. H. Landels, who is now a sergeant with the Princess Patricias. Mr. Reek took charge of the senior class in those subjects, beginning October 19, and

will also, as his directoral duties in P.E.I. permit, continue instruction from time to time throughout the new term. Before assuming his duties in Prince Edward Island, he was Assistant Professor in the Department of Physics at the Ontario Agricultural College. The College management is also planning to fill with interim instructors the places of three other teachers who are completing arrangements to enlist for overseas service.

PROGRESS OF UNDER-DRAINAGE

CHEAP, durable underdrainage is the latest practical move the Nova Scotia Department of Agriculture is making to encourage better farming in the province. In addition to the traction ditcher, which has been in use for some years, the Government has purchased and is operating a portable concrete-tile manufacturing machine, which has already proved of great service. Near Lyons Brook, Pictou County, where there exists a live interest in underdrainage, this machine has been in commission for over two months amongst the farmers of that district, and has manufactured 51,000 tile, 3-inch to 8-inch sizes.

The use of the machine means several important advantages to farmers.

They can manufacture tile on their own farms, if gravel and sand are readily obtainable. Moreover, it happens that in Nova Scotia most farmers are located at considerable

distance from a tile manufacturing plant. This and the fact that the freight they have to pay on such a bulky article as tile, disinclines them from underdraining their farms, even though that under-drainage is essential to a large proportion of the lands in the province. But by use of the portable tile-making machine, farmers can not only use it on their own properties but also employ their own labour in all the processes.

Then there is the co-operative advantage. The Department of Agriculture ships the machine to and from the centre or district that asks for its services, and also pays the travelling expenses of the operator. For their part, the farmers sign an agreement to manufacture not less than 20,000 tile for use in their district and to unload and reload the machine at the centre railway station. In all this the farmers co-operate amongst themselves and with the government to the mutual advantage of all parties concerned.

QUEBEC

PROVINCIAL DAIRY SCHOOL, ST-HYACINTHE

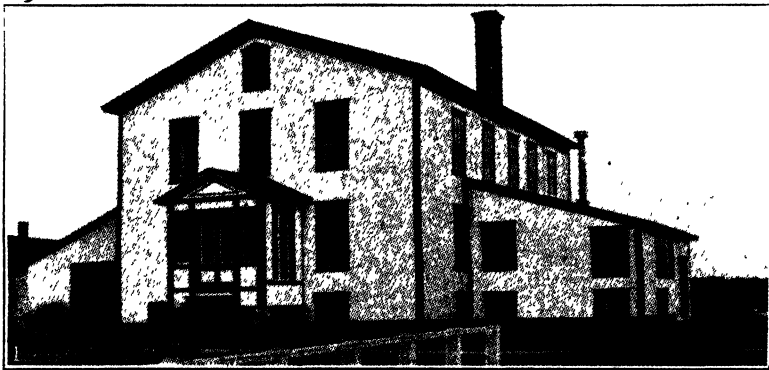
BY O. E. DALAIRE, DIRECTOR AND SECRETARY

INSTRUCTION in scientific dairying in the province of Quebec was inaugurated in the year 1881.

The first lessons in the manufacture of Cheddar cheese were given in a factory established at St-Denis, Kamouraska county, by Mr. J. C. Chapais, the present Dominion Assistant Dairy Commissioner.

Both these school-factories were accorded a special grant by the Provincial Government as a compensation for the expenses in giving such instruction.

It was that same year that the Quebec Dairymen's Association was established and it immediately opened up dairy classes at St-Hyacinthe and at St-Hugues, Bagot



THE FIRST DAIRY SCHOOL IN CANADA, ESTABLISHED AT ST-HYACINTHE, QUEBEC, IN 1892

In 1882, concomitant with the introduction of the first cream separator in Canada, similar scientific instruction in butter making was inaugurated at Ste-Marie, Beauce county. At the former place Mr. J. M. Joscelyn, who had been brought from the United States specially for that purpose, was entrusted with the teaching of cheese making, while Mr. S. M. Barré conducted the butter-making class at Ste-Marie.

Both these instructors were under the immediate supervision of the late Ed. A. Barnard, then Chief Technical Agricultural Officer for the province of Quebec.

county. Dairy courses were given at these two stations continually until the establishment of the regular dairy school at St-Hyacinthe in 1892.

This school, the first of its kind established in Canada, erected by the Quebec Dairymen's Association, was for several years under the control of the Dominion Department of Agriculture at Ottawa with Prof. J. W. Robertson as its first director.

This pioneer school being found insufficient for the growing and pressing needs of the dairy community of the province, the Provincial Government of Quebec replaced it

in 1905 by a larger and more appropriate building which cost in the neighbourhood of \$100,000.

The St-Hyacinthe Dairy School is under the joint control of the Department of Agriculture of Quebec and of the Quebec Dairymen's Association. Its motto is: "Uniformity in instruction to obtain uniformity in the dairy produce."

Until lately, butter and cheese factory inspection was only obsolete. This curtailed considerably the beneficial influence of the Dairy School.

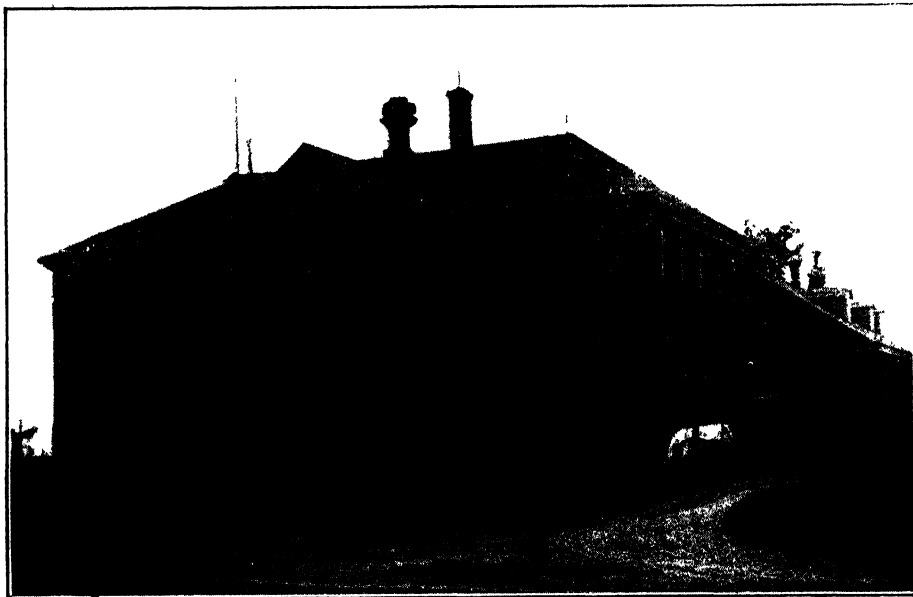
its way into every dairy factory of the province.

PROGRAMME

The curriculum of the Dairy School comprises everything that pertains to the scientific manufacture of butter and cheese and the proper keeping of dairy factories.

FARM

In connection with the school is a small farm on which are kept some fifteen to twenty dairy cows for



THE PRESENT DAIRY SCHOOL, ST-HYACINTHE, QUEBEC

In 1914, however, the Department of Agriculture obtained a law rendering imperative the inspection of all cheese and butter factories operated in the province. The entire territory has been divided into fifty inspectorates, each under the supervision of a competent inspector, who is responsible solely to the Minister of Agriculture and to the board of directors of the Quebec Dairymen's Association. Through this official the teachings of the Dairy School will penetrate and find

experimental purposes. The great bulk of the milk required for the school, both during summer and winter, is obtained from the farmers in the immediate vicinity. The farm is in charge of Mr. Azaire Payette, Chief Husbandman, and his assistant, Mr. Alph. Goyette.

DIPLOMAS AND CERTIFICATES

The following diplomas and certificates are awarded to the deserving students:—

1. A butter or cheese maker permit after two years' apprenticeship.
2. A certificate of expert milk or cream tester.
3. A diploma of cheese maker or butter maker.
4. A permit of dairy factory inspector.
5. A diploma of dairy factory inspector.

All these permits and diplomas may be cancelled at any time.

Assistant Butter Maker and in Charge of Milk Reception: ABRAHAM DALLAIRE.

Chief Cheese Maker and in Charge of the Shipping of Pure Culture Ferment in the Province: ED. CHARBONNEAU.

Professor and in Charge of Fancy Cheese Department: J. A. PLAMONDON.

OFFICIAL PROVINCIAL LABORATORY

Under the Dairy School's roof is harboured the official Provincial



GENERAL VIEW OF BUILDINGS AND FARM, DAIRY SCHOOL, ST-HYACINTHE, QUEBEC

STAFF

The following persons form the staff of the St-Hyacinthe Dairy School:—

Director and Secretary: O. E. DALAIRE.

Superintendent of Studies and General Inspector of Butter Factories: J. D. LECLAIR.

Chief Instructor in Cheese Making and General Inspector of Cheese Factories, ELIE BOURBEAU.

Professors and Assistants to the General Inspector: L. L. LACOURCIERE, GEORGE CAYER, OMER TESSIER, PIERRE BOUCHARD.

Professor and Assistant to the General Inspector: P. GAUDREAU.

Professor and Experimentalist: LOUIS BIBEAU.

Chief Butter Maker: ADJUTOR SERVAIS.

Laboratory of the province of Quebec. This laboratory renders innumerable services to the entire province on every branch of agricultural service, but most particularly to the department of dairying.

The staff comprises the following persons:—

Director and Chief Chemist and Bacteriologist: A. T. CHARRON.

Assistant Chemist and Bacteriologist: O. L. TOUCHOT.

DESCRIPTION AND SKETCH OF THE DAIRY SCHOOL

The Dairy School comprises three main buildings: The main school building, the butter factory and the cheese factory.

The main school building covers an area of 100 feet in length and 50 feet in width.

The butter factory and the cheese factory are similar in size and measure each 85 feet by 30 feet.

On the farm are also found the

man's apartments.

In the attic are located a few bed rooms and a work shop for the preparation of dairy instruments.

THE COURSE OF STUDIES

The Dairy School is always open



BUTTER-MAKING ROOM, DAIRY SCHOOL, ST-HYACINTHE, QUEBEC

chief husbandman's house and appropriate barns, stables and sheds.

The first storey of the main building contains the chief chemist's apartments and offices, the laboratories and a large lecture hall.

The basement contains a cloak room, bath rooms, and the watch-

room to students, but it is mostly during the winter months that the regular courses both English and French are held.

The yearly attendance oscillates between four and five hundred. The largest attendance reached in one year was 658 students.

THE ORDER OF AGRICULTURAL MERIT

THE Order of Agricultural Merit was established in the province of Quebec in 1890. Its purpose is to recompense or reward the best farmers and the giving of an example to the agricultural class.

The competition is conducted each year in one of five districts, each comprising several counties, into which the province has been divided.

The conditions of the competition are such that true merit and industry, not wealth, ensure success, the judges being required to distinguish those who make the best of their farms, without exhausting them, at the least outlay compared with the net profit they derive from them.

AWARDS

A diploma and a silver medal is awarded to those who obtain the degree of: Very great merit, that is, 85 points out of 100 assigned for perfect cultivation.

A diploma and a bronze medal is awarded for the degree of great merit, that is, 75 points out of 100.

A diploma is awarded for the degree of merit, that is, 65 points out of 100.

CONDITIONS OF COMPETITION

Those farmers who have won prizes in the county or county division competitions for the best cultivated farms are allowed to compete. In all cases, the competitor must cultivate, whether as proprietor or as tenant or farmer, a farm of which at least fifty acres shall be under cultivation, whether in grain, hay, pasture, garden-crops, vegetables, orchard, small fruits, etc. In making awards a scale of points is used. This is divided into two parts; points common to all competitors; and points subject to modification according to the different cases. The former totals 40 points and in the awarding of these is considered: the system of cultivation best suited to the soil and circumstances; division of the farm into fields; fences; destruction of weeds; house and buildings; agricultural tools and implements; manure; the greatest degree of order, of method and of carefulness, as exemplified by the working of the farm as a whole and in the condition of each part individually; and accounts (expenditure and profit).

In awarding the 60 points which are subject to modification according to the different cases, permanent improvements in relation to the peculiar circumstances of each farm; live stock, race, breed, quality, number, adaptation to the soil, climate, markets, etc.; state of cultivation of grain, meadows, pas-

tures, green-crops, hoed-crops, orchards, gardens, small fruits, etc. form the basis of consideration.

In awarding decisions the judges are guided by the perfection of the cultivation, whatever may be the quality of the soil, the course of cropping, or the system of improvement pursued. In judging the buildings the judges begin with the farmhouse, drainage, ventilation, water supply, etc., the barn, stable, cornstalls, piggery, dairy, poultry house, icehouse, and all buildings receiving careful inspection.

MAKING ENTRY

In making entry the competitor is required to give name; place of residence, parish or township; range or concession; post office; size of farm, acreage and situation; distance from nearest railway station or steamship wharf; to state whether he occupies the said land as owner, tenant or lessee, and the amount of municipal valuation of the farm; detailed list of stock kept and supported on farm; the system of cultivation he pursues; amount of manures and commercial fertilizers bought and applied; quantities of the different grains, fodder, vegetables, etc., grown the year before; precise information about his course of cropping, care given in selecting seeds, methods of cultivation, preservation of manure, etc., etc.

THE TWENTY-FIFTH ANNIVERSARY

The official celebration of the twenty-fifth anniversary of the establishment of the Order of Agricultural Merit took place on the 1st of September at Quebec, on the grounds of the Provincial Fair, and in the presence of a very large and enthusiastic crowd. The medals and diplomas won by the thirty-five laureates of the last two agricultural competitions were presented by His Honour the Lieutenant Governor of the Province. The celebration

took the form of a banquet, attended by many prominent members of the Quebec government and over three hundred farmers, laureates of the Order of Merit, at which many addresses pertaining to agriculture and its progress in the province of Quebec were delivered. Among the

speakers were Sir Lomer Gouin, Prime Minister; Hon. J. E. Caron, Minister of Agriculture; M. Levesque, M.P., for Laval; Alderman Cannon, representing the city of Quebec; Hon. J. Décarie, Provincial Secretary, and many others prominently connected with the Order.

COUNCIL OF AGRICULTURE

BY OSCAR LESSARD, SECRETARY

A meeting of the Council of Agriculture for the province of Quebec was held at Sherbrooke on the 8th of September 1915, the following were present: J. Antonio Grenier, the Deputy Minister of Agriculture; Hormisdas Pilon, chairman, Jos. Lafontaine, vice-president, Robert Ness, J. C. Draper, Thomas Hunter, Louis Lavallée, J. B. Carbonneau, Robert E. Skillen, Chas. C. Descary, François Manseau, Donat Caron and Michel Archambault.

The election of officers resulted in the re-election of President Hormisdas Pilon and Vice-president Joseph Lafontaine, respectively.

NOMINATION OF COMMITTEES

(1) Committee of Agricultural Merit Competition: Messrs. Ness, Tourigny, Draper, Hunter, Roberge, Lavallée, Lafontaine, Manseau, Caron and Archambault.

(2) Schools of Agriculture Committee: Messrs. Dawes, Pilon, Lafontaine, Messiers, Skillen, Carbonneau, Descary and Lavallée.

(3) Journal of Agriculture Committee: Messrs. Venne, Descary, Carbonneau and Hay.

(4) Live Stock Records Committee: Messrs. Dubord, Ness and Lavallée.

MACDONALD COLLEGE

THE CLIPPING LIBRARY—QUEBEC HOMEMAKERS' CLUBS

BY MISS FREDERICA CAMPBELL, DEMONSTRATOR FOR WOMEN'S CLUBS

THE clipping library of the School of Household Science, Macdonald College, consisting of Government bulletins, pamphlets and magazine clippings, is offered to the clubs for use in preparing programmes for their meetings. This library has proved invaluable, in fact indispensable, in promoting club work. Club members who, although otherwise anxious to help, might hesitate or refuse to prepare papers to be read before their respective clubs, now

feel little hesitation in so doing because they know that they can get reliable information on at least all the subjects pertaining to Household Science.

In these days when the page of Household Science topics is so important to the popularity of a newspaper or magazine, editors, although not always able to secure reliable articles on these important subjects, must needs accept what they can get. For this reason much that is published along the line of

Household Science is not up to the mark, therefore, it is especially gratifying to the members of the Quebec Homemakers' Clubs to know just where to turn for correct information.

DIRECTIONS FOR BORROWING MATERIAL

1. Address the request to Macdonald College Demonstrator for Women's Clubs, Macdonald College, province of Quebec.
2. State clearly the topic for which you wish the material.
3. Send in requests at least a fortnight in advance of the time the material is wanted.
4. Each member of a club must send for her own material. The secretary should not send for several others.
5. Return the borrowed material within two weeks after receiving the same according to the instructions on the envelope.

NOTE:—The envelope used for this purpose is buff, 13 by 10 inches, with clip fastening—rot gummed; stamped in top left-hand corner with 'Return within two weeks, in this envelope, to Demonstrator for Quebec Homemakers' Clubs, Macdonald College P.O., Quebec.'

CARD CATALOGUE HEADINGS

The following are the card catalogue headings of the Macdonald College Library of Clippings, Household Science Department.

- | | | | |
|-------|-----------------------------------|---------|---|
| 1-10 | ARTS AND CRAFTS | 43-50 | Public Health, Legislation, etc. |
| 1-4 | Woodwork. | 51-55 | Personal Hygiene. |
| 5 | Brasswork. | 56-59 | Prevention of Disease, Sanitation, etc. |
| 6-7 | Stencilling, Block-printing, etc. | 61-90 | HOUSE |
| 8-9 | Pictures. | 61 | Plans. |
| 10 | Design, Colour Work, etc. | 62-64 | Equipment. |
| 11-30 | FOOD AND DIETETICS | 65-70 | Decoration. |
| 11-13 | Preparation. | 71-75 | Furniture and Furnishings. |
| 14-16 | Foodstuff Information. | 76-77 | Water Supply. |
| 17-20 | Cost of Food. | 78-80 | Heat and Light. |
| 21-23 | Care of Food. | 81 | Ventilation. |
| 24-25 | Marketing. | 82 | Housekeeping Methods. |
| 26 | Service. | 84-85 | Insect Pests. |
| 27 | Pure Food—Legislation. | 86-90 | Rooms of House and their Care. |
| 28-30 | Nutrition. | 91-120 | TEXTILES AND FABRICS |
| 31-60 | HEALTH | 91-100 | Laundry: Cleaning and Dyeing Methods. |
| 31-36 | General. | 101-105 | Selection and Care of. |
| 37-42 | Home Nursing. | 106-115 | Quality, Standards and Analyses. |
| | | 116-120 | Manufacture and History. |
| | | 121-140 | DRESS |
| | | 121-130 | General. |
| | | 131-136 | Dressmaking. |
| | | 137-138 | Millinery. |
| | | 138-140 | Furs. |
| | | 141-160 | SOCIAL |
| | | 141-143 | General. |
| | | 144-146 | Rural Life. |
| | | 147-150 | Clubs. |
| | | 151-152 | Domestic Service. |
| | | 153-154 | Social. |
| | | 155-158 | Hospitality. |
| | | 159-160 | Festivals. |
| | | 161-180 | ECONOMICS |
| | | 161-165 | Standards of Living. |
| | | 166-170 | Cost of Living. |
| | | 171-172 | Co-operative Work. |
| | | 173-174 | Accounting and Financing. |
| | | 175 | Administration. |
| | | 176-180 | Institution Economics. |
| | | 181-190 | EDUCATION |
| | | 181-182 | General. |
| | | 183 | Moral. |
| | | 184 | Physical. |
| | | 185 | Industrial. |
| | | 186-189 | Education in Home Economics. |
| | | 191 | Equipment for Institutions. |
| | | 192 | Kitchen Management. |
| | | 193 | Laundry Management. |
| | | 194-196 | General. |
| | | 197-200 | Miscellaneous—Bibliography, Biography, etc. |

REGULATIONS

1. This library is used for filing clippings from magazines and newspapers, Government bulletins, pamphlets, etc.
2. These are placed in folders and attached with paper clips.
3. Each folder is numbered in the upper right hand corner and placed in an upright filing cabinet in numerical order.
4. For each folder a card, or cards are made out as follows:—

(1) *Title*—at top of card.

Subject e.g. Food, House, Social, etc.

Source—paper or magazine and date of issue, if bulletins from where issued.

Author.

Contents—brief summary of these.

- (2) In the upper left hand corner is placed the heading or subject under which you might expect to find the article in the library. In many cases you might look for it under different headings according to the phase of the subject you were studying, e.g. on the attached sample card just below this clipping might be looked for under *Canning*, or *Fruit*, or *Vegetables*. Therefore, to facilitate the finding of this article, it is wise to make out three cards for it and in the upper left hand corner of the first write *Canning*, of the second *Fruit*, of the third *Vegetables*. It may often be necessary to make out only one or two cards, however.
- (3) In the upper right hand corner of the card place the same number that is on the folder. For the three above cards the numbers would all be the same, of course—21.8, although the cards would be in different parts of the catalogue, being placed in alphabetical order there.
- (4) *The numbers to be placed on folders and cards* are obtained from the list of Card Catalogue Headings as outlined on attached sheets, e.g., Arts and Crafts, Food and Dietetics, etc.

a. Numbers run from 1-200 and are divided up among the different headings—Arts and Crafts, Food and Dietetics, etc., in a proportion according to the importance of the subject in this particular library—e.g., Arts and Crafts have only 1-10, while Food has 11-30, as there are liable to be more clippings in the latter subject than on the former.

b. When all the numbers allotted to a Heading in the Card Catalogue are used, it will be necessary to start another set of folders, going on from the last number in use in the cabinet. e.g. This is at present 200. If starting a new set of numbers, Food and Dietetics, they could be from 200-210.

c. A record of all numbers on the folders should be kept so that when making out new folders it will be known what numbers are already in use. *It is not safe* to rely on looking through the cabinet to find out the numbers in use as folders are constantly out of the library and it is a great waste of time as well as uncertain to have to look these up in the library book.

d. Having selected the subject of articles, e.g., Food and Dietetics, decide under which sub-heading you would place the article, e.g., Preparation, Cost of Food, Marketing, etc. Note numbers of sub-heading between which it may be filed, e.g., Preparation—11-13—look up numbers between these two now in use, and choose one not already taken. To keep numbers from being used make use of decimals as—11, 11.1, 11.2, 11.3, etc.

5. Note particularly that the cards are filed away in strict *alphabetical* order of headings in upper left hand corner, and the folders in *numerical* order.
6. A library book should be kept recording all articles borrowed from the library. It may be ruled in this way:—

Title of Clipping	Folder Number	By Whom Taken	Date When Taken	Initial of Person Responsible for Clipping being Taken	Date When Returned	Initial of Person Responsible for Clipping being Returned
"Care of Food in the Home"	21.1	Miss Fraser	Dec. 17 1913	K.A.F.	Jan. 14 1914	K.A.F.

SAMPLE OF CARD

CANNING

CANNED FRUITS AND VEGETABLES FOR
MIDWINTER 21 8

Subject—Food and Dietetics.
Source—American Food Jnl. Jan. 15/12.
Author—Elenora E. Reber.
Contents—Commercial canning explained. Household care of canned goods.

7. To collect clippings:—Mark and cut out all articles wished for library from papers, magazines, etc. Collect pamphlets, bulletins, etc. For clippings make note at once of:—

- (1) Date of issue—e.g., Nov. 1.
- (2) From where cut—*American Food Journal*.

8. Materials needed:—

- (1) *Folders*—It is convenient to have folders bearing numbers 1, 2, 3, etc. (without decimals attached) printed, and, then get some few hundred without printed numbers for use with decimals, e.g., 1.3, 1.4, etc.
- (2) *Metal tip guides for folders*—bearing numbers 1, 10, 20, 30, etc., to facilitate the task of finding folders in cabinet.
- (3) Index cards—plain—about 500.
- (4) Guide cards for index cards—A, An, B, Bi, Bo, etc.
- (5) Card cabinet or box for index cards.
- (6) Upright filing cabinet for folders.

FREE COURSE TO POULTRY RAISERS

A valuable Short Course of instruction and practice in poultry keeping will be given at Macdonald College, Ste. Anne de Bellevue, from February 14th to March 3rd, 1916.

This Short Course is intended to assist in supplying the demand for practical knowledge in the raising of poultry. It is of considerable value to all those who are now keeping fowls as well as to those who intend to start in the poultry business. Lectures will be given every day and hours will also be provided for work in feeding poultry and in incubation and brooding.

Some of the phases of the poultry business discussed will include: Profits in Poultry Keeping; Laying Out a Poultry Plant; Poultry Keeping on a Town Lot; the Intensive and Extensive Methods of Poultry Culture; Poultry House Construction; the Breeding and Judging of Utility Poultry; Incubation and Brooding; Methods of Feeding Poultry; Markets and Marketing Poultry Produce.

The Professor of Biology will give lectures on Poultry Zoology including:—The Anatomy of the Fowl; the Embryology of the Chicks; and the Parasites of Poultry.

The Professor of Cereal Husbandry will give a number of lectures on Crop Production and Soil Management as related to poultry raising.

The Professor of Horticulture will give a course of lectures on The Growing of Small Fruits, the Care and the Management of the Orchard, and other horticultural subjects of interest to poultrymen.

The College Veterinarian will give lectures with demonstrations on the Hygienic Requirements of Poultry, Cleanliness, and various poultry diseases.

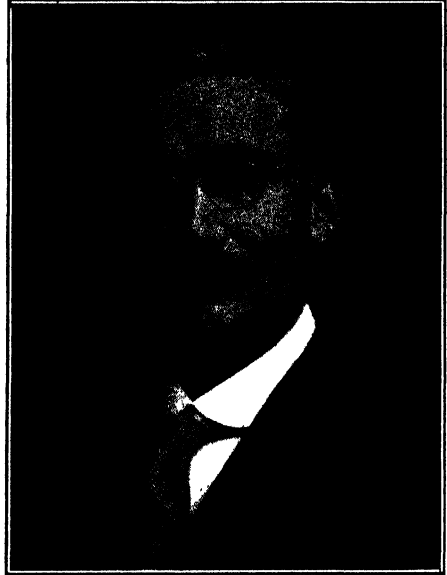
The Demonstrator to Homemaker Clubs will give lectures and demonstrations on Trussing Birds for the Table, Roasting and Serving Poultry, and the Value of Poultry and Eggs in the Diet. This course will be of special interest to all housekeepers.

The poultry plant at the College gives excellent opportunity for the study of the practical side of the industry. The course will be full of up-to-date information designed for practical poultry keepers and it should enable all interested to become more familiar with the principles of successful poultry keeping.

ONTARIO

FRUIT FOR CANADIAN SOLDIERS

THE Ontario Department of Agriculture is at present engaged in making arrangements to forward large consignments of fruit for the use of soldiers on active service. At the Vineland Experimental Station 20,000 gallon cans of peaches are being put up and will be ready for shipment in a short time. In addition, about 5,000 boxes of apples have been purchased and packed, the majority of them being from orchards used by the Department during the year for demonstration purposes. A portion of this fruit will probably be sent as a contribution to the British Navy, but the bulk of it will be used in the Canadian Hospitals. A portion may also be forwarded to the Canadians who are prisoners in Germany if arrangements can be made for its safe transit.



DR. J. B. DANDENO, PH.D.
Inspector of Elementary Agricultural Classes,
Ontario Department of Education, whose appointment
was noted in *THE AGRICULTURAL GAZETTE*, Vol. 2,
August, page 784.

WOMEN'S INSTITUTE WORK

An indication of the very general interest which the Ontario Women's Institute organization is attracting is seen in the fact that an enquiry was recently received by the Ontario Department of Agriculture from the Conservative and Unionist Women's Franchise Association of England asking for information in regard to the organization and intimating a desire to start a similar body in Great Britain. No doubt the

splendid work which has been accomplished by the Women's Institutes along patriotic lines has attracted even more attention than usual. In complying with the request for information a copy of a recent issue of *THE AGRICULTURAL GAZETTE* containing information about the Women's Institutes in every Province of Canada was forwarded along with other publications.

NOTES FROM DISTRICT REPRESENTATIVES

SUPPLIED BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

PEEL COUNTY

J. A. Carroll, B.S.A.:—

"Late blight appears to be in 95 per cent of the potato fields in this county and is causing more or less anxiety, and in different fields where I have dug up a few hills I have found many rotten potatoes. The demonstration spraying plot which we had on the farm of Mr. Jas. Johnston has been sprayed regularly with Bordeaux and on Thursday I was very pleased to find that the rows in the field that had been sprayed showed no signs of blight whatever, while the remainder of the field was considerably blackened. While on my rounds visiting the School Fair plots in Caledon, it was very encouraging to find that a number of men had been spraying their potatoes for blight. They had received a circular letter which was sent out in July by this office warning them that the cool, wet weather was favourable to blight and advising them to spray to save the crop."

SIMCOE COUNTY

J. Laughland, B.S.A.:—

"We had rather a novel feature in connection with the office window display last Saturday. Earlier in the week I had an article inserted in the local papers asking people to make a display of asters. The result was that 50 bunches were brought in, and during the day and evening made a very attractive display in the window. I had these judged and afterwards sent to the hospital. I intend to carry out this scheme with other kinds of flowers, vegetables and fruit, having just one kind each Saturday.

"The School Fair movement seems to be gaining in popularity all the time. Teachers, pupils, trustees, school inspectors and all who can assist the movement are giving loyal support. School Boards that refused to give any money towards School Fairs when they were first started are now eager to come forward with a grant. In Vespra township this year the directors were asked to raise \$3 or more and I am pleased to say that every School Board made a grant of \$5 in addition to private contributions and donations from Women's Institutes. In Oro township, where the School Fair is being held for the first time, the directors have raised \$99.25. One school in Oro has just forwarded the entries to-day which number 175."

DUNDAS COUNTY

E. P. Bradt, B.S.A.:—

"The apple scab is particularly bad in this district this year owing to the wet weather. We applied the fifth spray to our Demonstration Orchard during the last week of August and managed to hold the scab almost entirely under control. There will be a very small percentage of No. 1 fruit in this district this year. The majority of the people just put on the regular three sprayings and they seem to have had very little effect in controlling the scab. This goes to prove that in a year of this kind it is necessary to keep on applying the spray in order to control the fungous diseases.

"We held our first School Fair at Dixon's Corners on September 24th. We were somewhat unfortunate in having a rather rough, cold day, but in spite of this fact we had a record attendance. The number of exhibits in many classes were larger than last year. The school parade proved to be a very interesting feature of the Fair. There were sixteen schools competing and upwards of 400 pupils. The craning which these pupils had received reflected great credit on their teachers. Col. McDonald and Andrew Broder, M.P., who acted as judges, complimented the schools very highly on the way in which they went through their various drills. This proved to be such a satisfactory feature of the School Fair movement that we intend to make it a permanent fixture in connection with the work in this district."

HASTINGS COUNTY

A. D. McIntosh, B.S.A.:—

"One pleasing incident in connection with Rawdon Township School Fair was the visit made by Mrs. Hutchinson and her pupils from the Glen Ross School in Sidney township. By a vote of 21 to 3 the children chose to go to the Rawdon Township School Fall Fair in preference to attending the regular Agricultural Society Fair which they had been accustomed to attend for years past. This shows at least where the children's greatest interests are. Dozens of grown-ups have been heard to say that the School Fall Fair exhibits were much better than those of the same kind shown at the Agricultural Fairs.

"It gave me a great deal of pleasure to attend the School Fall Fair put on by Mr. Campbell, Indian Agent at Deseronto for

the Tyendinaga Indian Reserve. The exhibits were fine, the prizes liberal, the sports good, and withal the Fair was to be highly commended and Mr. Campbell congratulated on this his first effort along this line."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"We held our first School Fair at Agincourt on Saturday, September 11th, which was by far the best Fair we have had in that township. We had nine hundred and sixty-three entries, fourteen calves and eight colts. It was a little early for the Fair but the exhibit was good and there was an attendance of upwards of one thousand people."

NORTHUMBERLAND COUNTY

R. S. Beckett, B.S.A.:—

"We conducted our School Fair at Wooler on the 22nd. Here again the interest in the School Fair movement was well sustained and we had approximately an attendance of 700 and the competition was quite keen in practically all the classes. The School Fair parade was an interesting feature of the programme for the spectators and gave them a very good idea of the number of children engaged in the work. One of the schools also put on the flag drill at the conclusion of the parade. We were only able to get two to take part in the Public Speaking Contest. It would seem that to overcome the children's dread of making their first appearance on the public platform larger prizes will have to be given for this part of the programme and this is a very worthy part in my estimation. More encouragement will be given next season."

GREY COUNTY

H. C. Duff, B.S.A.:—

"The acre corn plots this year are just as good as they were last year and in many cases better. In looking over the results I notice that one of the boys who had a good plot last year has about 27 tons to the acre. I do not think the average for any of the competitors will be less than 20 tons per acre. In almost every case the corn is exceptionally well cobbled."

"The fact that Markdale voted on and passed the by-law to adopt hydro also meant much extra work for us for the simple reason that it reawakened the hydro question with the farmers. We were again besieged with requests to urge the Commission to give the farmers a chance to have hydro on the meter basis plus service charges. The Commission has

not given us a definite answer as yet but informed us that they were considering the matter and we have every expectation of being able to get power for the farmers on the same basis as it is being supplied to the Waterloo Farmers' Syndicate."

"The Markdale Horticultural Society held its annual Flower Show on Friday and Saturday. This society was organized by our office and it always means considerable work for the staff. The display of flowers and plants this year was exceptionally good. A large number of ladies from the country exhibited and obtained a large share of the prizes. A Lawn and Garden Competition was put on in both the town and country, that is, a separate competition for each."

ELGIN COUNTY

C. W. Buchanan, B.S.A.:—

"On Wednesday we had a successful Stock Judging Contest at the Strathford Fair where we had eight boys, most of them members of our Junior Farmers' Improvement Association, take part in the contest. We had good classes of heavy horses, dairy and beef cattle, sheep and swine. We are taking this method of finding our best stock judges for the competition in Guelph. This week we have another contest at the Springfield Fair. The boys are taking a keen interest in the work."

MIDDLESEX COUNTY

I. B. Whale B.S.A.:—

"At the Strathroy Fair the directors offered four prizes for stock judging. We had charge of this work on Wednesday morning. Ten young men took part in the competition, placed and gave reasons on the class of Hereford cattle and a class of Holsteins. The boys did very good work in placing and the reasons were fairly good, although they had become somewhat rusty on the form of giving reasons, which shows very clearly that continual practice is necessary with this line of work."

"The Junior Farmers also put up a very good exhibit at the Strathroy Fair, showing the products of their farms, and results of experiments which they have been conducting. The exhibit was very favourably commented on by nearly everyone at the Fair."

"During the past week we have been attending the Western Fair, looking after our exhibit which attracted a good deal of attention. We had numerous inquiries along every line of agriculture. One feature of the exhibit was the demonstration of treatment for smut methods, having the grain, formalin and barrel right

there. More questions were asked about that than anything else, as people are realizing the need of seed treatment. The charts showing the dates of seeding, and seed selection which I secured from Professor Zavitz, were studied carefully by a large number of farmers."

LAMBTON COUNTY

G. G. Bramhill, B.S.A.:—

"While engaged on the Acre Profit Competition work I interviewed the different contestants regarding the benefit they received from the course in agriculture held in Sarria last winter. In every case they expressed themselves as being very well satisfied with the course. These young men appeared to have a greater interest in their farms and could discuss more intelligently the various problems of the farm, as a result of their course work. In the face of unfavourable climatic conditions and prevalence of plant disease one of the contestants, Mr. H. Kember, secured a yield of 354³/₄ bushels of marketable potatoes, and a total yield of 394¹/₂ bushels per acre."

FRONTENAC COUNTY

C. Main, B.S.A.:—

"August 23rd, 24th, 26th and 27th were spent in judging School Fair plots in Portland and Loughboro townships. It was very pleasing indeed to observe the interest that many of the pupils had taken in the care of their plots. While it was impossible for all of them to take prizes, yet in many cases it was somewhat difficult to discern the prize winners, owing to the fact that the plots had been so well cared for and were so uniform. On the other hand there were a few who did not seem to realize that much care was needed in order to have a nice appearing plot. In nearly every case I took special pains to point out to the pupils where they might have improved the appearance and stand of their plots.

"Following Joyceville, on September 9th was held the Rural School Fair for Kingston township at Cataragui. Here we used the large Town Hall which made a splendid place to erect tables and display the exhibits. A field near by was secured from Mr. Simpson for the purpose of showing the colts and calves and carrying on the sports. This Fair was a clean cut success in every way. A five-minute address given by Johnny Saunders, was on our 'Flag.' He pointed out its history and what it stood for in a manner which surprised all those who had the pleasure of listening to his voice."

WENTWORTH COUNTY

R. L. Vining, B.S.A.:—

"Just after school opened Inspector Smith had occasion to visit school section No. 8 at Rockton. He asked how many of the children of this school were planning to make an exhibit at the Fair and a show of hands revealed the fact that twenty-six out of twenty-eight children would be exhibitors. While all the schools will not do as well as this, it is a pretty good indication of the sentiment throughout the township.

"We have been particularly fortunate in cleaning up pear blight in a seven-acre orchard. Mr. Donald reports on his last inspection that the disease, so far as can be judged from outward appearances, is not spreading any further. On our first visit to the orchard we found a great many of the trees affected. We cut out everything showing the disease, and marked a number of trees which the owner has removed. Besides demonstrating that it is possible to control this disease, we have convinced Mr. Townsend that it does not require a great deal of time to go through an orchard and remove the diseased branches. Needless to say, he is particularly pleased regarding this bit of work, since he told me that he valued each tree at \$25."

RENFREW COUNTY

M. H. Winter, B.S.A.:—

"I beg to acknowledge receipt of your letter of September 1st, with regard to treatment of seed grain for smut. I had advertisements put in three of our local papers last week. To further bring this before the people I am making a large copy of the advertisement and will put it in a prominent position at our School and Fall Fairs. We carried on a campaign for treatment of grain for smut last spring, and as a result I have seen and heard of many cases where results have been most apparent. One man ran out of oat seed and finished with untreated seed. In walking across the field you could tell to a drill where he had started to use the untreated seed. Where the untreated seed was sown the smut was very bad, on the other part there was no smut to speak of.

"In visiting the plots of the different children we were much pleased with the response to our class in root seed production. Several of the children have plots which are producing a large quantity of seed, both of mangels and turnips. Their initiative in showing the parents what can be done in this line should go a long way towards the production of home grown seed in the future. We are having the seed shown on the stalk at our Fairs."

MANITOBA

THE AGRICULTURAL COLLEGE BOARD

THE officers of the new governing board of the Manitoba Agricultural College are James Duthie, Hartney, chairman, and George H. Greig, secretary. Mr. Duthie is one of the most progressive

ing directors. They have full authority to regulate the conditions of admission to the college; to fix fees for tuition, board and lodging; to arrange the courses of study in each branch in which instruction is given; to regulate the conduct and work of students, and the sessions, terms and vacations in the college; to regulate and confer all degrees, diplomas, certificates of proficiency, scholarships or other awards to be given after examination in each of the subjects, and under such conditions as they shall from time to time determine;



MR. JAMES DUTHIE
Chairman of the Manitoba Agricultural College Board

farmers in Manitoba and one of the best judges of live stock. Clean farming and good stock are hobbies with him and on his own farm of over 1280 acres he has twelve miles of fencing and a pure-bred herd of about seventy-five. Mr Greig is secretary of the Manitoba Live Stock Associations and in close touch with the agricultural needs of the province.

The importance of having good men on the college board becomes apparent on investigation of the very wide powers granted to the govern-



MR. GEORGE H. GREIG
Secretary of the Manitoba Agricultural College Board

to appoint a principal or president and such professors, lecturers, teachers, instructors, officers, assistants and servants as they may deem necessary for the efficient working of

the college and the promotion of its usefulness, and to prescribe their respective duties and fix their salaries and wages, which before becoming effective must be first approved by the Lieutenant-Governor. In addition the board is given general authority to do anything necessary or useful in carrying out the purpose and objects of the college and they have, of course, power to pass such by-laws, rules and regulations as may be deemed necessary. Expenditures for the purposes of the college may be made by the board up to the amounts authorized by the Lieutenant-Governor-in-Council from time to time.

The board consists of ten directors, of whom the Minister of Agriculture and Immigration is one, ex-officio; five are appointed by Order-in-Council and four selected by the farmers residing in as many divisions of the province by means of delegates

chosen to make the selection. Vacancies on the board are filled by the persons or body who appointed or selected the director whose position has become vacant. Members of the board hold office for a term of three years.

In the matter of remuneration for services on the directorate, an allowance not exceeding five dollars per day is paid, together with actual necessary travelling expenses in attending meetings.

These meetings have not been held in the past at any specified interval, but intermittently. It is likely, however, that a regular time of meeting will be set for future meetings.

To the list of names of those comprising the board published on page 988 of the October number of THE AGRICULTURAL GAZETTE should be added, Mrs. J. R. Dutton, Gilbert Plains, Manitoba.

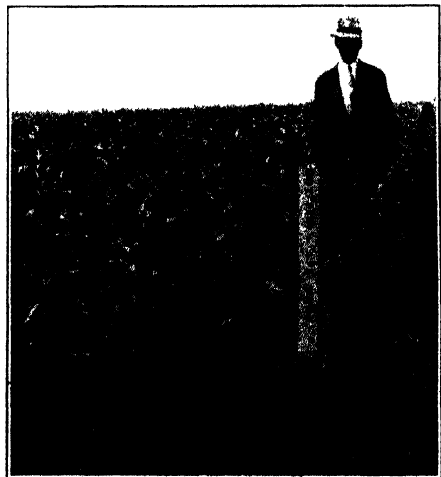
HEAVY YIELDS ON DEMONSTRATION FARM

BY H. J. MOORHOUSE, ASSISTANT DEPUTY MINISTER OF AGRICULTURE

THE provincial demonstration farm on the Manitoba Agricultural College grounds consists of seven one-acre plots, and was established for the purpose of ascertaining the most desirable rotation for the Red River Valley soils. Most of this land originally was covered with water during the rainy season; but during the past two years experimental drains have been run through the greater part of the property and the land is now in a position to produce magnificent crops.

It is questionable if there is any land in Canada to-day which is better than that of the Red River Valley, providing it is sufficiently tile-drained to remove the surface water promptly. The crops on the seven fields of the demonstration farm have been saved and carefully weighed; so far as cereals are concerned the results are indeed very satisfactory.

Plot No. 1 was in alfalfa and was cut twice—first on July 5th and second on August 7th. The com-



PLOT OF CORN
Demonstration Farm, Agricultural College, Winnipeg,
Manitoba

bined yield was 3 tons 512 lb. per acre. This yield has been greatly lowered by the drought in the early part of the season when the alfalfa was in a critical stage.

Plot No. 3 was wheat, sown on summer-fallow. It gave the fine yield of 63 bushels and 7 lb. per acre.

Plot No. 4, sown to Banner oats, also yielded abundantly, 97 bushels,



SECOND GROWTH OF ALFALFA ON ROTATION PLOTS
Manitoba Agricultural College, Winnipeg, Manitoba

Plot No. 2 was in common red clover. Cut on July 16th, it gave a yield of 3,800 lb. per acre, cured head.

11 lb. per acre being obtained. The oats were of particularly good quality weighing 42 lb. per bushel.



PLOTS OF WHEAT AND OATS
Demonstration Farm, Agricultural College, Winnipeg, Manitoba

Plot No. 5 was in corn and owing to the spring and fall frosts the yield was very light—9 tons, 520 lb. per acre, green.

Plot No. 6, also in wheat on last year's corn stubble, gave the yield of 38 bushels and 10 lb. per acre.

Plot No. 7 received a partial summer-fallow and was then sown to Red

Clover, which has made a good growth.

The above is evidence of the value which tile drainage is on wet land and these experiments, made possible by the federal grant under THE AGRICULTURAL INSTRUCTION ACT, have established precedents which will be of wide practical benefit to the farmers of the province.

FARMERS' CO-OPERATIVE POULTRY FATTENING STATION

IN order to help the farmers in preparing and marketing this season's poultry crop, it has been decided to open this fall a Farmers' Co-operative Fattening Station in the Poultry Department of the Manitoba Agricultural College. This Station is to be operated on a strictly co-operative basis, ensuring to the farmers the best prices for their poultry. The demand in Winnipeg for properly dressed poultry of high quality is much beyond the supply, and it is hoped to obtain the advantages of the extra prices paid. Not only will the Fattening Station provide best prices for the farmers, but it will ensure a much better finished product for the consumer.

The chickens are to be shipped in from the farmers, fattened in the Poultry Plant, then marketed. Only the actual cost of fattening and handling the poultry will be charged against the farmer and deducted from the price received, dressed.

Spring chickens only of the heavier breeds will be taken. Before ship-

ping, the farmer must communicate with the Poultry Department of the college, stating the number he wishes to have fattened: also the breed. The importance of this rule is due to the fact that a limited number only can be handled at one time; by complying with it the supply can be regulated so that there will be no overcrowding. The farmer will be notified when to ship as soon as the Poultry Department has received particulars from him.

Farmers must furnish their own coops, the express on which will be deducted from the amount their chickens bring on the market. All coops must be properly addressed to the Poultry Department, Manitoba Agricultural College, Winnipeg.

It will take from fourteen to eighteen days to fatten the chickens. They will then be killed, dressed and sold at the highest prices possible and the returns made to the farmer. Returns should be in the farmer's hands about three or four weeks after the chickens are shipped.

APPOINTMENTS TO AGRICULTURAL COLLEGE STAFF

IN pursuance of the policy of strengthening the teaching staff of the Manitoba Agricultural College, the following seven definite appointments have been made by the Governing Board of the College:

G. C. White, professor of rural economics and farm management; E. W. Merchie, associate professor in chemistry; J. A. Neilson, lecturer in horticulture; Dr. D. M. Lineham, physician for college; Miss Patrick, instructor in household science; Mrs. Zinck (reappointed), director of girls' physical training department.

SASKATCHEWAN

DOMESTIC SCIENCE SCHOLARSHIPS FOR FARMERS' DAUGHTERS

THE plan of granting scholarships which was first adopted in 1906 to encourage farmers' sons to acquire a thorough and scientific training in agriculture and which in this connection was discontinued in 1910 when the provincial College of Agriculture was first opened, has also been attended with success when applied to the encouragement of interest in household science training. In view of the fact that there is not in Saskatchewan a school of household science, at which farmers' daughters may acquire a proper training to fit them for their life work, arrangements were made to provide scholarships to encourage the young women of the province to attend such institutions in other parts of the Dominion. That these scholarships have been of much benefit is evidenced by the following data giving the number of scholarships awarded each year since the plan was first adopted:

Macdonald College Guelph, Ontario	Manitoba Agricultural College
1909 one	.....
1910 one	.....
1911 ..	four
1912 ...	five
1913 two	ten
1914 one	fourteen
1915 one	sixteen

A list of the scholarships and the regulations regarding them is as follows:

"With a view to encouraging farmers' daughters to acquire a thoroughly practical and scientific training in the various branches of domestic science, the Department of Agriculture of the province of Saskatchewan offers the following scholarships for competition among students from the province attending the

Domestic Science Department in the Manitoba Agricultural College, The School of Home Economics at the Ontario Agricultural College, Guelph, Ontario, or the School of Household Science at Macdonald College, St. Anne de Bellevue, Quebec:—

1. To each student from Saskatchewan passing with first class honours in her first year (the winner of No. 3 is not eligible to compete for this scholarship) \$ 75
2. To students from Saskatchewan passing in all subjects of the first year (winners of No. 1 and No. 3 are not eligible to compete for this scholarship) 50
3. To the student from Saskatchewan standing highest among the students from Saskatchewan in general proficiency in the work of the first year. 150

FOR THE SECOND YEAR

4. To each student from Saskatchewan graduating with first class honours on completion of the regular two years' course (the winner of No. 6 is not eligible to compete for this scholarship). 100
5. To students from Saskatchewan passing at the end of the second year in all subjects of the regular two years' course (the winners of No. 4 and No. 6 are not eligible to compete for this scholarship).. . . . 75
6. To the student from Saskatchewan standing highest among the students from Saskatchewan in general proficiency in the graduating class on completion of the regular two years' course. 150

Any students from Saskatchewan at any of the colleges named herein though otherwise eligible to compete for scholarships Nos. 3 and 6 shall not be awarded one of such scholarships unless there are in her class at least five Saskatchewan students eligible to compete for either of the said scholarships.

Scholarships are not offered for third or fourth year work. In awarding scholarships the work for the entire year will be

considered. Scholarships will be awarded and paid as they fall due upon receipt of reports from the principals of the respective colleges showing the standing of students from the province.

Students winning scholarships must furnish proof satisfactory to the Minister

that they have been *bona fide* residents of the province for at least two years immediately before entering college and that during that time they have spent at least two summers in practical work in a farm home.

POULTRY MARKETING PROJECT

IN recent years the price realized for dressed poultry at country points in the west has usually been very low with the result that but little interest has been taken in poultry raising. For the low prices there are several reasons, chief among which might be mentioned the fact that farm-dressed poultry is seldom properly killed and bled and consequently does not keep well even in cold storage. Knowing this, dealers have refused to handle the poultry except on a wide margin. To remedy this condition, the Saskatchewan Department of Agriculture, working in conjunction with the Poultry Husbandry division of the Provincial College of Agriculture and the Canadian Northern Railway, has arranged to operate a Poultry Demonstration Car over certain of the C. N. R. lines. A baggage car has been fitted up as a poultry receiving and killing station. A six weeks' itinerary providing for one day visits to thirty-four selected towns has been ar-

ranged and farmers or others having poultry to dispose of are invited to fit up their birds, and bring them in alive to the car. Experts from the Poultry Husbandry Division who accompany the car receive, grade and kill the birds and also assist the producers with the plucking. When the birds have been properly killed and graded, a representative of the Co-operative Organization Branch of the Department of Agriculture takes delivery of them and makes advance payments at prices in accord with their quality. When the birds have been cooled they will be packed in boxes holding twelve birds each, and shipped to Regina, when they will be sold or held in cold storage until market conditions are favourable. When all of the birds have been disposed of, a final payment, which will return to the producer every cent realized from the sale of his birds, less the cost of boxes, transportation and storage, will be forwarded. The itinerary extends from October 5 to December 3.

DISTRICT REPRESENTATIVES' WORK

MR. W. W. Thompson has recently made a trip of inspection of the territory covered by the representatives of the Department of Agriculture at Shaunavon and North Battleford.

In the Shaunavon district, in which Mr. T. L. Guild is the representative, about a week was spent, mostly in the vicinity of Assiniboia, Aneroid, Ponteix and

Shaunavon. Mr. Guild has ten demonstration fields in hand. The majority of them are this year under summerfallow, but next year will be sown with hand collected or registered seed. On Mr. Ludlow's farm just south of Assiniboia an interesting demonstration is in progress. A field of twenty-four acres has been selected, eight acres were broken shallow in early June, well worked

with disc and harrow and then back set late in July; eight acres were broken deep in June, and have since been well worked with disc, float and harrow. The remaining eight acres had been under crop for three years, and were well summerfallowed this year, being ploughed deep early in June and well worked thereafter. The three plots, lying parallel to each other, will all be sown to wheat next year, and interesting results should be obtained.

Corn, grown from seed supplied by Mr. Guild, was not a success, having suffered from the late frosts in June. Seven one acre plots of winter rye have been arranged for. A dairy farm near Shaunavon, for which the cattle had been supplied by the provincial Live Stock Branch, had twenty acres in spring, and twenty acres in winter rye, both looking well. North of Ponteix a field of fall wheat was noted, with a thick and heavy crop. Several fine fields of alfalfa were also seen in this territory.

In the North Battleford district, where Mr. J. G. Raynor is the representative, it was found that he had held a large number of institute meetings during the past winter, many demonstration fields have been established, and a considerable amount of educational work has been done with regard to school gardens, school fairs, etc.

It was pleasing to note that in this district corn in practically every case would yield well. At Ruddell a ten-acre field of corn was visited which should yield, at least, eighteen tons to the acre, while near Waseca corn measuring nine feet was seen. Twenty-one acre plots of winter rye have been arranged for, and the locations chosen are such that the crops will be brought to the attention of all in the district. A farmer near Waseca had a twenty acre field of winter rye, from which he threshed forty bushels to the acre.

Throughout the whole journey it was found that farmers, municipal officials and others highly appreciated the work of the district representatives, and advice as to cultural problems was eagerly sought for and well received. Mr. Thompson was greatly impressed with the value of the work which can be accomplished by district representatives of the department, and hopes that it will soon be possible to have more men and smaller districts in the western portion of the province at all events, where owing to the fact that it is the more recently settled portion, greater opportunities exist for educational work, as the farmers are more willing to accept advice than those in the earlier settled districts.

ALBERTA

THE DEMONSTRATION FARMS

BY H. A. CRAIG, B.S.A., DEPUTY MINISTER OF AGRICULTURE

A SYSTEM OF EDUCATIONAL CENTRES

THE Demonstration Farm in Alberta does not occur as a single or isolated phenomenon among the things which a Government may bring to pass or as a distant interior centre for visits by the

curiosity hunter, but as a series or system of normal working centres in agriculture. On these farms are objectified for neighbourhood people and others what are considered sound principles and practice in tillage, cropping, stock-keeping and management. There are seven

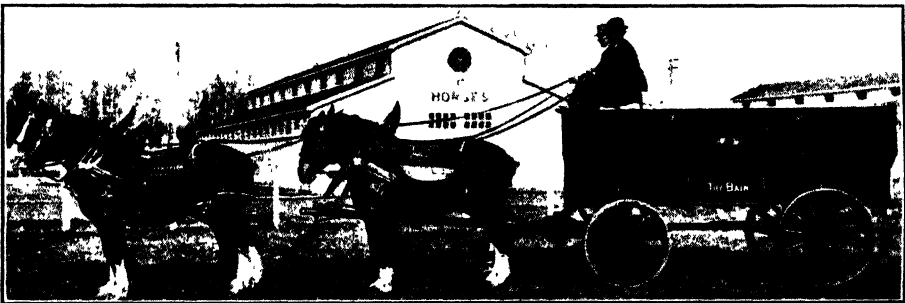
farms, most of them established four years ago. They are situated at Medicine Hat, Claresholm, Olds, Sedgewick, Stony Plain, Vermilion and Athabasca. They vary from a half section to a section in size.

The operating of a number of these farms instead of a single one has two objects. The first is to localize, as far as possible, the educational advantages from the farms by serving a number of communities at home. The second is to work out systems of farming closely fitted to the rather wide variations in soil, climate, and other conditions in the province. There is no doubt that the necessary isolation of the farmer, geographically speaking, is the chief hindrance to his having

moisture, heavy soil, trees and shrubs and the absence of drying winds. It may mean a two-year rotation, one of which is summerfallow in one case, and a four-year rotation of grains and grasses with no summerfallow at all in the other. As a matter of fact, two, three and four year rotations are being instituted or have already been instituted, based largely upon the dominant matter of moisture resources.

ALL FARMS AND MIXED FARMS

To call the series of demonstration farms a system means rather more than that, they reflect local needs in various cases. On account of centralized management, the gen-



TYPE OF HEAVY HORSES USED ON DEMONSTRATION FARMS

up-to-date, ready-to-use information and this has to be met by taking the information to him through improved agricultural literature, the institute, the fair, the short course school and other channels. Concrete teaching is always effective and the demonstration farm is of this kind with regard to both general and particular features as it shows a whole agricultural plant in operation.

The need of varying soil management in different parts of the province scarcely requires any argument. A light rainfall, a light soil, bare prairie, and an atmosphere promoting rapid evaporation, both summer and winter, make up conditions that have to be met in a different way from those included in liberal

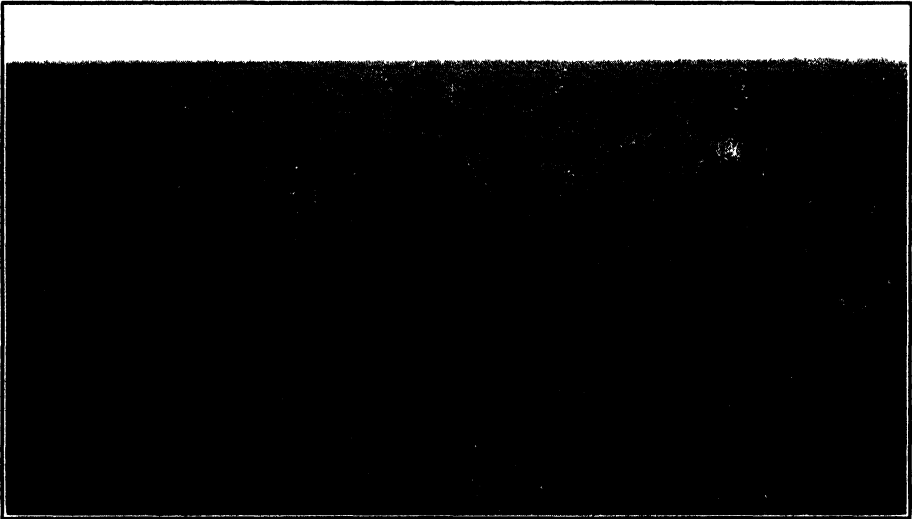
eral purpose served by the farm is common, the uses of the different farms are harmonized and coordinated and the experience on one is available for guidance on the others. The number of farms makes it possible to keep a variety of kinds and breeds of live-stock and these may be moved and increased or decreased according to need or convenience as between the farms. All farms are dominated by a rotation system and are run as mixed farms. They all have good live-stock equipment of horses, cattle, sheep, swine and poultry.

The farms are not intended for research or experimental centres. They are intended to put into practice the best things learned from

experiment, especially within the province.

While most of the stock is pure-bred, all of it is not, and so the farms in some cases reflect common conditions in the province where most farmers have to be contented with ordinary commercial grade stock in horses, beef and dairy cattle, sheep and swine. All sire stock of course is pure-bred. The building and implement equipment of the farms is not beyond the ordinary for a well equipped farm. Stables are modern and sanitary, but not needlessly

make an annual balance sheet, but this on a farm is no better than an annual count of range stock at round-up time with no attention to conditions affecting the count during the rest of the year. One of the greatest benefits that can be conferred on the business of farming is the establishment of some system analogous to that practised in commercial and manufacturing enterprises by which the proprietor or manager may know as he goes how he is getting along. While the system in use at the demonstration



FIELD OF OATS IN STOOK, DEMONSTRATION FARM, ALBERTA

expensive. The work of the farms is done by horse power, but a twelve-horse power gasoline engine does the stationery power work such as chopping, straw-cutting, etc.

MODERN FARM ACCOUNTING

An important feature has been introduced into the administration of the farms this year. This may be described as a current or progressive cost of production system of farm bookkeeping. Most farm enterprises are run independently of what may colloquially be called a business tab. A few, and only a few, farmers

farms is more elaborate, perhaps, than is applicable to the ordinary farm, it will, no doubt, be part of the educational work of the farms to suggest such simple adaptations of the essentials of the larger scheme as will be applicable to smaller enterprises.

The system involves a capital inventory in the first place as a basis of interest charges and a rather elaborate classification of properties and undertakings such as land, buildings, fences, general equipment, special equipments relating to the use of power, stock, crop products,

dairy and other classes of stock. Market values do not figure except in the case of the sale of animals or commodities so that profits and losses do not figure except as they are at hand. Practical results are substituted for theoretical or paper profits or losses.

SEED GRAIN AND LIVE-STOCK SUPPLY

The farms have been made to serve a variety of practical uses. They have been able to supply seed grain such as wheat, oats, barley and potatoes, and pure-bred stock, such as dual purpose and beef cattle, dairy cattle, sheep, swine and poultry. About seventy pure-bred dual purpose bulls have been sold during the past two years. The prices charged for these have been fair market prices for the quality of the stock furnished. Plans of standard farm buildings, such as horse and cattle barns, are also furnished.

LOCAL PROGRESS

There are evidences in the neighbourhood of all the farms that they are having an influence on the quality of local agricultural work. Larger numbers each year are taking advantage of the dairy herd testing and competition work which is carried on at present at three of the farms. Local associations are springing up as a result of extension work in the neighbourhood of the farms. A flourishing potato club is organized and producing on a large scale at Stony Plain, a seed growers' association at Vermilion and another at Claresholm. In conjunction with the active policy of the large introduction of leguminous crops such as alfalfa, the clovers, and peas, steps are being taken to secure the production in quantity of home-grown alfalfa seed.

THE FARMS AND THE AGRICULTURAL SCHOOLS

The educational work of the Department has found additional ex-

pression in the establishment of agricultural schools for both boys and girls on three of the farms, viz., at Olds, Claresholm, and Vermilion. The farms exercise important functions with respect to these. In the first place they furnish a wholesome, normal, rural environment for the students during the time they are getting their education. The live-stock of the farm is available for demonstrations in instruction in types and breeds in the class rooms. In a few cases the officials on the farms have been able to give regular instruction on such matters as farm management in the schools. The operations of the farm in relation to the care of stock and to tillage and crops are subject to observation by pupils.

MAKING KNOWLEDGE COMMON

The channels through which a knowledge of the work and results on the farms are made available to the benefit of the public are many. Neighbourhood visits are common and occur at all times of the year. Excursions are organized at the height of the growing season each year and are liberally patronized. The number on each excursion so far has varied between 300 and 800. These are held commonly to the farms on which the schools are situated, and the plot work of the experimental and demonstration ground of the schools is also open for inspection. A number of the provincial conventions such as the dairy convention, fairs convention, weed inspectors' convention, household science and agricultural teachers' institutes, agricultural officials' meetings, industrial associations and other meetings are held at the farm and school centres, all of which help to make the operations of the farms known to the public. Members of the agricultural and general press frequently secure news of the work of the farms at first hand. In addition to this, the department issues

reports of the work of the schools. Only one separate report has been issued so far, but as the farms become more highly improved and

results begin to appear from many things that so far are just in the beginning, annual reports will be published.

BRITISH COLUMBIA

POULTRY BREEDING STATIONS

BY J. R. TERRY, CHIEF POULTRY INSTRUCTOR

DURING the past season the Provincial Department has placed out twenty Poultry Breeding Stations as compared with eighteen last year. The breeds utilized are as follows:

White Wyandottes . . .	11 pens
Barred Rocks . . .	5 "
Rhode Island Reds . . .	2 "
Buff Orpingtons . . .	1 "
White Orpingtons . . .	1 "

Despite the high price of feeding stuffs, practically all of the caretakers report greatly increased sales of settings. Although the Department requires a minimum sale of fifteen settings per Station, some of the Stations have disposed of nearly fifty settings. A remarkable

feature is the fact that in some locations as high as \$70 per ton has been paid for wheat, and at one Station the breeder has paid \$9 per cwt. for beef scraps. This is just double the price of this feed stuff at close points. The Stations are performing a valuable work, especially in the newer sections of the country, notably the Bulkley Valley and Peace River countries. In these districts previous to the inauguration of the Stations, settlers were practically unable to purchase poultry of any kind excepting the nondescript varieties offered for sale by the native Indians. It will be noticed that the whole of the pens are composed of fowls of the general-purpose breeds.

An apartment, a flat, or a borrowed house, however charming and luxurious, is not, in the truest sense, a home—the heart is lacking. Let the merest shack become our own, and suddenly we find the interest of love peeping through every stick and stone. Flowers spring up like magic around the door-step; vines creep lovingly about the windows; joyous voices, merry laughter, and happy songs float out from its sheltering roof. Its inmates cheerily and bravely take up the daily burdens of life. It is hallowed with associations; it is home; and its inmates carry that home in their hearts all the days of their lives. In joy and sorrow it goes with them, even to the grave, and—who knows?—perhaps even beyond.—*Virginia Holmes Johnstone, Nelson, B.C., in Women's Institute prize essay.*

PART III

Rural Science

HOUSEHOLD SCIENCE IN ELEMENTARY SCHOOLS

MACDONALD COLLEGE

BY KATHARINE A. FISHER, HEAD OF SCHOOL OF HOUSEHOLD SCIENCE

IN regard to the introduction of Household Science into the elementary schools of Quebec, we have been trying to introduce sewing into the schools as it requires almost

no equipment, and with that object in view we give a course in sewing to every teacher attending Macdonald College School for Teachers.

QUEBEC

BY FATHER O. MARTIN, DOMESTIC SCIENCE SCHOOL INSPECTOR

IT was stated in the April number of THE AGRICULTURAL GAZETTE that there are now forty-five schools of Domestic Science in the province of Quebec. The working of these schools was described as well as the spirit and devotion animating staff and pupils, the results that are expected and the assistance that is granted by the Department of Agriculture.

Since that time two other schools of the same kind have been organized, they will follow in the steps of their predecessors.

It may be stated positively that the teaching of domestic science is becoming more and more popular in our province and this growing popularity is highly encouraging. The interest which is now taken in domestic science by the various classes of the community, leads us to hope for a change of opinion among

many people who have so far been labouring under a false impression. It will tend to the rehabilitation of the main factor of happiness in the home: the woman's work.

THE WOMAN'S WORK AT HOME

The silent contempt with which the obscure farmer's wife was formerly looked upon is fast disappearing before the busy loom, the busy hoe, the busy bee and the busy woman

The domestic science schools have been closed for the holidays since the end of June, but before the pupils left for home, the public were given an opportunity of appreciating their skill by an exhibition of the articles made during the year. The assembly hall of each institution was filled with a very large number of works of art, revealing a high degree of skill

and artistic taste and a still larger number of useful articles in which the practical sense of the workers was admirably shown.

It was decided this year by the Department of Agriculture to reserve a place for the domestic science school at the great provincial fair which was opened in Quebec on the 28th of August. This decision deserves a great deal of praise. It may not, however, give all the results that were expected, as most pupils take their articles with them on leaving the schools, and carefully store them away at home.

How many of these articles will come out of these hiding places to reveal the talent and skill of their authors? It is believed it would be unwise now to break the seals that may have been affixed to many of them, but it is hoped that a sufficient number of exhibits will be shown to reveal the usefulness of the domestic science schools.

THE WOMEN'S INSTITUTES

A contribution on the Women's Institutes, written by the secretary

of the Department of Agriculture was published in the July number of THE AGRICULTURAL GAZETTE.

To the facts already known, it may be added that these institutes have recently been visited by an officer of this Department. The organization of these institutes is quite recent, as will be remembered, but they have already done splendid work in the centres where they have been organized. Under the vigorous impulse of the workers, horticulture and poultry breeding have developed in a way which surpasses all expectations. The number of garden and poultry houses has greatly increased, and domestic work has not in the least been neglected.

Monthly meetings are held regularly. The admission is free and they are looked upon as social events. Women and girls of all classes work hand in hand, help each other, confer with one another, and enlighten each other to the great satisfaction of the public, which is beginning to believe that the virtues of our grandmothers have reappeared in the women of to-day.

MANITOBA

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION

PRACTICAL cooking is rapidly becoming popular and gradually being introduced into Manitoba schools.

Household science may be taken as an option for algebra, Grade XI certificate, in schools where adequate equipment is installed and a qualified teacher employed. Thus far only Winnipeg and Brandon collegiates make this option possible.

Regular courses in cooking are given in Brandon and Winnipeg to all girls above Grade VII in the public schools.

The Departments of Education

and Agriculture are encouraging the introduction of cooking, especially the preparing of a hot lunch at noon, in all rural and consolidated schools, where the great majority of the children bring cold lunches. The following is a clipping from the October Bulletin of the Department of Education issued to all teachers:—

THE HOT LUNCH IN RURAL SCHOOLS

This idea is coming into prominence. A coal oil stove with an oven can be obtained for \$10 or \$12; the necessary utensils for \$4 or \$5 more. Why not have the pupils co-operate and serve one hot dish each day; hot soup; creamed potatoes; creamed corn.

Any one of a score of easily prepared dishes will make the noon meal more palatable, nutritious and attractive. Try it out and let us hear from you regarding the result.

Some of the schools have already established this hot mid-day lunch.

The consolidated school at Starbuck last year engaged a special teacher for two days of the week to teach domestic science to the girls during school hours, and to the older girls and married women in a night class.

The school board of the village of Sifton last year engaged a competent woman of the village to take the older girls of the school one afternoon each week in cooking and one afternoon in sewing.

Most school boards realize the

importance of these subjects being taught the older girls, and many are endeavouring to meet the demand according to their respective needs and conditions.

HOW TEACHERS ARE PREPARED

The Normal school at Brandon has added an elementary course in domestic science and art.

The summer school at Winnipeg for the past three years has given free courses to teachers in these branches.

The agricultural college last year added a course in which second class teachers may enter and in three years graduate as specialized teachers in domestic science and domestic art.

A DEPARTMENT OF RURAL SOCIAL SERVICE FOR THE ONTARIO AGRICULTURAL COLLEGE

BY PROF. J. B. REYNOLDS

THE rural problem of which we hear so much at present, is not a question of philanthropy. It is not an instance of moral deterioration of the inhabitants, as is that of the city slums. The rural problem has been created by certain disintegrating forces acting upon the life of country communities during the last thirty or forty years. The relatively high wages offered by industrial enterprises in the cities, and the cheapness of western lands, have depleted the rural population of Ontario. The use of farm machinery has had the same effect and has also weakened the spirit of co-operation by enabling the farmer to do so much of his work alone. The extension of our markets, and the increasing demand for high class farm products, require that the farmer of to-day be a business man as well as a producer.

The depleting of soil fertility by early wasteful methods of farming, and the multiplication of weeds, insects and crop diseases in recent years, require a technical knowledge not dreamed of by the farmer of two generations ago. Hence, the increasing opportunities offered to those born on the farm for profitable enterprises elsewhere, the consequent falling-off of rural population and the impoverishing of rural social life, and the increasing difficulties in farming that can be successfully met only by vocational training—these factors have conspired to create the rural problem. It is partly an economic problem, a matter of satisfactory profits for labour and capital invested. It is partly educational, a matter of vocational training to enable the farmer to be master of the conditions amidst which he works. And it is partly social, a matter of the

satisfactions available in country life for the leisure hours.

Many agencies have been set to work to attack this three-fold problem. The Agricultural College, the Farmers' Institutes, the Women's Institutes, the work of the District Representatives, have, each and all, done much towards the solution of the problem. But it is obvious that with the exception of what the Women's Institutes have done incidentally, no organized effort has been made to cope with the social disadvantages in rural districts. The department of Social Service, or Rural Community Work, which is the subject of this article, is designed to deal with that branch of the problem in a definite and systematic fashion.

Perhaps the special aim of this branch may be defined as social and recreative. And the importance of these can hardly be over-estimated. The tendency on the farm is to take too little rather than too much leisure and recreation. The Social Service branch aims, by assisting in organizing rural communities, to foster a healthy play life and social life. During this first year of its existence, the branch has worked mainly in three directions: (1) the training during the college term of rural leaders among the students; (2) a two-weeks' course for rural leaders in July and August; (3) Rural Life Conferences.

THE TRAINING OF STUDENT LEADERS

The branch has recognized the basic fact that the most effective way to help a rural community of independent people who would naturally resent any sign of outside interference or patronage, is to enable them to help themselves. And yet that is what many communities are unable to do efficiently for lack of leaders with the will and the

ability to lead. During the College year classes were organized to study the rural problem and to learn methods of social organization. A Rural Life Conference was held in January at which the students of the college were the principal speakers, and the advantages and disabilities of country life were frankly presented by these young men and women as they had found it in their own experience. That should be followed up the coming winter by the consideration of one particular problem, *e.g.* the question of rural athletics, or of literary societies. When these students go back to their homes to form parts of rural communities, it is expected that they will develop powers of local leadership in a healthy and joyous social life.

THE RURAL LEADERS' COURSE

A number of country ministers, a few young women, and some representative farmers, met here this summer for a two weeks' course. The object of the course was to discuss the present day rural problems, and to show the ministers particularly that their legitimate business as country ministers was to acquire an interest in those problems, as a means of approach and an opportunity for efficient leadership.

RURAL LIFE CONFERENCE

Our secretary, Mr. A. McLaren, attended a number of these conferences in the summer and is very enthusiastic respecting the effect of them on the social life of the communities. In every instance, he went only where he was invited, where the people already wanted something and needed only advice and trained assistance in organizing. No better idea of the scope and purpose of these conferences can be got than by reading over a programme of one of them:

COMMUNITY WELFARE CONFERENCE

— AT —

PORT CREDIT

MAY 21ST AND 24TH, '15

Under the auspices of the
community movement executive.

PROGRAMME

OF

SPECIAL MEETINGS, SERVICES AND
PUBLIC GAMES

GENERAL COMMITTEE IN CHARGE

Miss M. Yates, Alex. MacLaren, O.A.C., Guelph,	
A. W. Briggs, K.C.,	Dr. Walter Price,
D. E. Hughes,	J. E. Maybee.
E. S. Munroe,	N, K. McKechnie,
Chairman.	Secretary.

— — —

PROGRAMME OF MEETINGS

Friday Evening, 7.30, at the Band Stand

Moving Picture Exhibit;	"Flies and Mosquitoes."
Music by Port Credit Band.	Addresses on Community Problems.
Our Municipal Needs	- - - - - Mr. W. C. C. Innes.
Our School Problems	- - - - - Mr. A. W. Briggs.
Our Band	- - - - - Mr. Geo. Gordon.

Saturday Evening, 7.30 o'clock, at the Oddfellows' Hall

Music by the Band. Addresses on School, Home and Public Life.

Educational Problems	- - -	Inspector Galbraith.
Conveniences in the Home	- - -	Miss E. M. Chapman, of the Women's
		Institute Branch of the Department of Agriculture Club.
Partnership in the Home	- - -	Mr. Alex. MacLaren, O.A.C., Guelph.
Our Duty to Our Country	- - -	Rev. G. P. Duncan.

Sunday, May 23rd—Special Morning Services in the Churches

Sermons on "The Church and its Relation to the Community."

Open-Air Afternoon Meetings at 2.30 o'clock.

FOR GIRLS—At Mr. Briggs' grounds, Elmer Avenue

Subject: "Girls' Organizations" - - - Miss Lily Taggart,
Supt. Secondary Division Girls' Section, Toronto, S. S. Association.

FOR BOYS (14 and over)—At the Lighthouse, 2.30 p.m.

Subject: "The Canadian Standard Efficiency Tests" - - - Mr. A. MacLaren

FOR ADULTS—At Mr. A. Block's, Lake Shore, 2.30 p.m.

Subject: "The Adult Bible Class and its Relationship to the Community's
Problems" - - - Mr. H. H. Shaver, Cooksville.

Sunday Evening, at 8 o'clock, a Special Union Service will be held at the
Band Stand

Addresses by the Rev. Mr. Earle, Rev. G. P. Duncan, Rev. F. A. Nourse and
Mr. A. MacLaren.

MASSED CHOIRS - - - Instrumental Music.

VICTORIA DAY, MAY 24TH

MORNING

Meeting for Parents, Teachers and Children, at the School Grounds, at 9.30 o'clock.

Demonstrations of Games and Recreations - - Messrs. MacLaren and McKechnie.

10.30 o'clock. Short Talk: "Continue Your Education" - - Rev. Mr. Nourse.

11 o'clock. "School Gardens" - - Mr. J. A. Carroll, Dist. Rep. Dept.
of Agriculture, Ontario.

11.30 o'clock. "Choosing a Vocation" - - - - Mr. N. K. McKechnie.

AFTERNOON

Sports and Games at the Credit Grove--2 o'clock

EVENTS

1. Pick-a-Back Race. Open.
2. Boot Race--15 and under. Regular laced boots must be worn.
3. Blindfold Wheelbarrow Race. Two to each wheelbarrow. One wheeling is blindfolded, and one seated directs.
4. Needle Race. Open.
5. 75 Yard Race. Boys 12 and under.
6. 100 Yard Race. Boys 12 to 14.
7. 100 Yard Race. Boys over 14.
8. 75 Yard Race. Girls 12 and under.
9. 75 Yard Race. Girls over 12.
10. Sack Race--14 and under.
11. Sack Race--over 14.
12. May-pole Dance.
13. Boy Scout Display.
14. Three-legged Race--14 and under.
15. Three-legged Race--over 14.
16. Blindfold Pillow Fight.
17. Mile Race. Open.
18. Tug-of-War. Port Credit versus Clarkson.
19. Game of Playground Ball between two picked teams.

Refreshments on the Grounds by the Ladies' Aid Society of the Methodist Church.

Clerk of the Course--A. W. Briggs.

Convenor Sports Committee--Dr. Walter Price.

Starters--F. Moore, W. E. Clancy.

Equipment Committee--A. Gray, E. Nourse, G. Hall.

Grounds Committee--F. Moore, J. Munday, A. W. Briggs.

COMMUNITY WELFARE

This Conference is organized to give us the opportunity of discussing the needs of our village and of considering what can be done to meet those needs.

If any community is to progress a COMMUNITY SPIRIT must exist; that is, each individual must know and act on the knowledge that he is "his brother's keeper."

The men and women who will speak know and will tell us what this community may be if all work harmoniously for the public good. Let everyone make a special effort to attend the meetings and gain inspiration to make this village notable among Ontario communities.

To further the work of the Conference it is important to know what the people of this community think about their village and what they think should be done for its welfare.

If you see anything you believe is wrong in the village, if you see a want which might be filled, if you have a remedy for any existing ills, please fill out the enclosed slip and send or hand it to Mr. W. C. C. Innes, Port Credit, or any member of the Committee before Friday next.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

MINNESOTA'S SCHOOL HOUSE CONSTRUCTION CODE

THE state of Minnesota exercises a control over school-house design and construction. Following are the minimum requirements as to the building and equipment of rural and consolidated schools demanded by the minimum school house construction code.

I. RURAL SCHOOLS

1. A one-room rural school-house must have, in addition to the schoolroom, a room for the school library and at least one coat room. It must be provided with a satisfactory system of heating and ventilation, by means of a ventilating room heater or a basement furnace. Provision must also be made for a supply of water, free from contamination and made available without the use of the common drinking cup. All schools not having indoor toilets must be provided with two widely separated outhouses, near the rear of the school grounds and be concealed by lattice work or shrubbery.
2. A two-room schoolhouse must have, in addition to its two schoolrooms, a room for the school library and at least two separate coat rooms. It must be provided with a satisfactory system of heating and ventilation, by means of ventilating room heaters or a basement furnace. Provision must also be made for a supply of water, free from contamination and made available without the use of the common drinking cup. All schools not having indoor toilets must be provided with two widely separated outhouses, near the rear of the school grounds and concealed by lattice work or shrubbery.

II. CONSOLIDATED SCHOOLS

A. A consolidated school of less than

four departments shall provide for not less than seventy pupils, and must have:—

1. Not less than two schoolrooms.
2. Not less than two coat rooms.
3. A library room, with a floor area of not less than two hundred square feet.
4. A manual training room, with a floor area of not less than three hundred and sixty square feet.
5. A room for home economics, with a floor area of not less than three hundred and sixty square feet.
6. A general assembly room, in addition to other rooms, or made available by combining the two schoolrooms.

The building must be equipped with:

1. A system of heating for the entire building.
2. A gravity of fan system of ventilation.
3. A water pressure system.
4. At least one bubbling drinking fountain on same floor as schoolrooms.
5. Lavatories, flush toilets, septic tank or sewer connection.

B. A consolidated school designed to provide for two hundred pupils shall have:

1. Not less than four elementary schoolrooms.
2. A high school study room.
3. Not less than five coat rooms.
4. At least one recitation room.
5. A library room, with a floor area of not less than two hundred square feet.
6. An agricultural laboratory, with a floor area of not less than two hundred square feet.
7. A manual training room, with a floor area of not less than five hundred and sixty square feet.
8. A room for home economics, with a floor area of not less than five hundred and sixty square feet.

9. A general assembly room, in addition to other rooms, or made available by combining two schoolrooms.
 10. An office.
- The building must be equipped with:
1. A heating system for the entire building.
 2. A fan system of ventilation.
 3. A water pressure system.
 4. At least one bubbling drinking fountain on each floor on which schoolrooms are located. One fountain shall be required for each eighty pupils on a floor.
 5. Lavatories, flush toilets, septic tank or sewer connection.

ECONOMY IN FOOD

UNDER the triple heading of "Economy in Food," "Appeal to Country People," "Produce Food for Yourself," the following appeal is made in the September issue of the *Journal* of the Board of Agriculture of Great Britain:—

Everyone who lives in the country or has a garden can produce *something* to eat—the more the better; vegetables, fruit, poultry, eggs, rabbits, milk, cheese. Plant at once what you can, and prepare in all possible ways for next year's cropping!

EVERY PLANT IN YOUR GARDEN MAY SAVE YOU MONEY

Produce all you can; buy as little as possible! Cultivate thoroughly! Destroy insect pests and weeds! Prepare manure!

PRESERVE AND STORE YOUR CROPS WITH THE GREATEST CARE

The finest harvesting may be rendered useless by bad storing. Protect from the weather! Destroy vermin! Store your own vegetables! Bottle your fruit or make jam or pulp of it! Preserve your eggs when abundant! Cure your own bacon.

EAT LITTLE MEAT

Replace meat by milk, cheese, peas, beans and lentils, which are as rich in flesh-formers as meat, and much cheaper. Use more vegetables! Eat more fruit!

BAKE YOUR OWN BREAD: IT WILL BE CHEAPER AND BETTER

Use whole-meal flour from home-grown wheat, barley and oats. Good, wholesome bread can be made from:—

- (1) Household flour, or wholemeal flour.

- (2) One-half household flour and one-half barley meal.
- (3) Seven-eighths whole-meal flour and one-eighth fine oatmeal.
- (4) Four-fifths whole-meal flour and one-fifth maize meal.
- (5) Three-fourths household flour and one-fourth boiled potatoes.
- (6) Oatmeal.
- (7) Barley meal.

COOK VEGETABLES BY STEAMING

Boiling in water reduces their food value! Cook potatoes in their skins! Use the hay-box cooker; it will save coal.

USE LESS COAL

Burn wood, peat, etc., whenever possible.

SAVE FODDER

Use acorns, chestnuts and beech-mast for stock; bracken for litter; all suitable straw for fodder; fodder crops for pigs. Keep pigs, poultry or rabbits to eat up house refuse, damaged vegetables, light corn.

WASTE NOTHING

Buy nothing from abroad that can be produced at home.

For suggestions as to the best methods of doing these things and to stimulate endeavour the following pamphlets and leaflets have been published by the Board, any of which can be obtained gratis upon application to the Secretary, Board of Agriculture and Fisheries, Whitehall Place, London, S. W. England. "Economy in Food, Circular 917;" "How to Save and Why;" "Saving the Food of Nation" and "Hints on Hay-Box Cookery."

RUSSIAN AGRICULTURAL IMPLEMENT REPORT

THE Department of Agriculture in connection with the Russian Government maintains in Siberia agricultural implement depots for the supply of machinery and other articles to the poorer settlers on easy terms of payment.

There are between 250 and 300 of these depots in operation, and the total sales in 1913 amounted to some 7,500,000 roubles, or \$3,862,500. The depots had machinery in stock at the end of 1913 to the value of over 5,000,000 roubles, or \$2,575,000.

According to a return issued by the Government Migration Commission, only 2½ per cent of the debts contracted by the peasants at the depots between 1897 and 1907 remained still unpaid at the close of 1913, and the percentage owing on the sales at that date for 1909 was 6.5 per cent;

1910, 11.6; 1911, 20.4; 1912, 28.6; 1913, 56.9.

It will be seen, therefore, that the extinction of debt proceeds on what must be considered satisfactory lines, the actual loss due to non-payment being relatively negligible when the total turnover is considered.

A statement of sales of the Government implement depots in Siberia in 1913, includes single ploughs, double ploughs, ploughs and seeders combined, cultivators, harrows, broadcast seeders, broadcast seeders and disc drills, mowers, hay rakes, reapers and reaping attachments, binders, winnowers and cleaners, grain sorters and separators and a large number of smaller implements used on the farm, in the farm home, the farm dairy, as well as materials used in the construction of farm buildings.

RUSSIAN MARKET FOR FERTILIZERS AND SPREADERS

THERE has been much discussion of late in Russia concerning the desirability of developing the production and sale of artificial manure, especially superphosphates. The use of artificial manure in connection with a tendency toward intensive agriculture is constantly increasing, and there is now a great scarcity of such fertilizers.

There are in various parts of Russia plentiful deposits of raw superphosphates, but until factories can be started near such deposits for making chemical fertilizers high prices for such fertilizers will probably prevail, owing to the heavy cost of freight and other charges incident to their importation from other countries. At present there are practically no factories in Russia for making artificial manures.

At a recent meeting in Petrograd of representatives of the Russian Department of Agriculture with representatives from zemstovs (provincial councils) and agricultural implement manufacturers it was agreed that arrangements should be made by zemstovs and other similar bodies for a combined purchase of artificial manure and for the granting of favourable credit, so as to keep out syndicates and other inter-

mediaries between the manufacturers and the consumers.

It was further considered desirable for developing the artificial fertilizer industry that the following programme should be recommended to the Government:—

(1) Continuing geological and technical investigations in Russia in connection with deposits of phosphate, salt of potassium, pyrites, and other articles suitable for making artificial manure.

(2) Granting money prizes for the invention of new methods of preparing artificial manures.

(3) Granting credit by zemstovs and other similar bodies on favourable conditions for starting factories and operating deposits of phosphates and other minerals used in the manufacture of artificial manure.

(4) Subsidizing gas, coke, metal, and other factories whose by-products could be utilized in making artificial manure.

(5) Removing the duty on materials to be used for erecting and fitting up factories for manufacturing artificial manure, and also on bags used exclusively for packing superphosphates.—*Weekly Bulletin, Department of Trade and Commerce.*

SOCIETIES AND ASSOCIATIONS

The annual convention of the Ontario Vegetable Growers' Association will be held at the Parliament Buildings, Toronto, on Tuesday, November 9th. A number of vegetable experts, including several from the United States, will be present and deliver addresses.

Two important features of work undertaken by the Association this year are Vegetable Field Crop Competitions and Experiments in the Production of Home Grown Seed.

The annual convention of the Ontario Horticultural Society will be held at the Parliament Buildings, Toronto, on Wednesday and Thursday, November 10th and 11th. A number of experts along the line of civic improvement will be present, among them Thos. Adams, the Town Planning Expert, and John Dunbar of the Horticultural Department, Rochester, N. Y.

The annual Provincial ploughing match, under the auspices of the Ontario Ploughmen's Association, was held on the grounds of the Ontario Agricultural College, Guelph, on Friday, November 5th. In addition to the competitions in walking ploughs, there was given exhibitions of tractors on November 3, 4, and 5, showing the capabilities of modern machinery in tilling the soil.

The annual convention and exhibition of the Quebec Beekeepers' Association will be held in Montreal on November 11th and 12th, 1915. Dr. Emery Lalonde of Rigaud, Que., is president of the Association and Oscar Comire, Secretary-Treasurer.

The Entomological Society of Ontario, of which Dr. Gordon C. Hewitt, Dominion Entomologist, is the president, will hold its fifty-second annual convention on Ottawa on November 4th and 5th, 1915. An interesting programme has been prepared. Papers and addresses will be given by L. Caesar, E. M. DuPorte, A. F. Winn, Rev. Thos. W. Fyles, W. Brittain, E. H. Strickland, W. Lockhead, J. M. Swaine, R. C. Treherne, Arthur Gibson and others. A public meeting will be addressed by Dr. H. T. Fernald, State Entomologist of Massachusetts, Amherst, Mass., on Life Zones in Entomology and their Relation to Crops."

The executive of the Edmonton Poultry and Pet Stock Association has arranged a series of special meetings for its members, in view of the fact that there will be three large winter shows in Alberta this year, namely, Calgary, Lethbridge and Edmonton, the following programme prepared for the first half of the season is evincing great interest:

Monday, Oct. 18: Lessons from the first Alberta egg laying contest, by A. W. Foley.

Monday, Nov. 1; Commercial Poultry, the full preparation for the market, with a practical demonstration by R. B. Hunter.

Monday, Nov. 15; The best method for feeding and housing the winter layers, by Mr. V. T. Richards.

Dec. 6; The exhibition bird, its best preparation for show pen, by J. C. Longmore.

Dec. 20; Common diseases of poultry their symptoms, prevention and cure, by Jos. Shackleton.

The thirty-second annual Ontario Provincial Winter Fair will be held at Guelph, Ontario, from December 3rd to December 9th, 1915. The official premium list of this fair has just been issued, which includes a full list of the judges, with the rules and regulations governing each department, together with the detailed prize list of the various departments and classes.

Among the features of the Winter Fair will be the live stock judging competition for college students and farmers' sons under 25 years of age, and inter-year judging contest among the students of the Agricultural College, and an inter-county live stock judging competition. This latter competition has been inaugurated by the winter Fair Board to encourage a deeper interest in live stock on the part of the young men of the province and is open to one judging team from each county, each team to consist of three young men under 25 years of age, who have attended a 4 to 6 weeks' course in agriculture and who have never taken a regular course in an agricultural college. In each of these competitions special cash prizes, in addition to trophies and medals, are to be awarded.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE EXPERIMENTAL FARM

Seasonable Hints. The third issue of Seasonable Hints under date of November, 1915, has been issued recently and is available on application to the Publications Branch, Department of Agriculture, Ottawa. This issue contains timely hints relative to live stock; forage plants; cereals; smut infection of grains; horticulture, which includes winter protection of strawberries, grapes, roses and fruit trees; hints and advice relative to the fall cultivation of the soil and the preparation of the compost heap; poultry, bees and tobacco culture. An outstanding feature of this issue is the working plans of a suitable shed for the shelter of implements. It is stated therein that it costs on the average \$1,000 to equip an average farm with the necessary machinery, which if exposed to the deteriorating effects of the weather will not do good work for more than five years. A shed such as illustrated can be built for approximately \$400, which would protect the machinery and thus prolong its use and maintain its efficiency.

THE PUBLICATIONS BRANCH

List of Suggested books for Farmers' Libraries, pamphlet No. 3 of the Publications Branch. This pamphlet, which is a reprint from THE AGRICULTURAL GAZETTE Volume 2, No. 9, September, 1915, comprises a list of books compiled from lists recommended by a number of the leading agricultural societies of Canada. The books recommended cover the following subjects; Animal Husbandry, Dairying, Poultry, Horticulture, Elementary Agriculture, Nature Study, Botany, Bacteriology, Entomology, Chemistry, Physics, Rural Economics, Agriculture, Agricultural Engineering, Concrete, Mechanics, Flowers, Apiculture, and English.

HEALTH OF ANIMALS BRANCH

Report of the Veterinary Director General, 1914. The activities of the Veterinary Director General's Branch for the year ending March 31st, 1914, were many and varied. Particulars of all are fully given along with reports from the different chiefs of the service and inspectors and superintendents of quarantine. Continued losses from hog cholera are recorded and an outbreak of dourine in Alberta is noted. There were fewer cases of glanders. Particulars of treatments are given from each province. Speaking of Hog Cholera, the

Director General (Dr. F. Torrance, B.A., D.V.S.,) states that 9,900 hogs were slaughtered at a cost of \$61,588.44 in compensation. As the hog population of Canada is approximately 8,000,000, the loss of even 10,000 is not regarded as high. Cattle mange showed a diminution. Horse mange, the report states, furnishes a moderate number of outbreaks, and is found difficult to eradicate because it often goes without notification to the Department until it has spread sufficiently to cause alarm. Tuberculosis continued to cause anxiety, but the Department was unceasing in its efforts to check its spread. No fewer than 7,877 horses were tested on arrival from the United States and allowed to proceed to their destination. Detailed tabular statements are supplied of imports and exports of horses and cattle, sheep and swine inspected, and of those tested for disease. The inspection of horses from the United States and Newfoundland totalling 29,726, mules 1,641, cattle 14,747, sheep 213,332, swine 374, goats 822, asses 22, elk 8 and elephants 5. A list of the establishments inspected is given with a numerical table of the diseases found and the animal quantities affected. The reports of inspectors, branch experimental farm experts and divisional officials are embodied in the Appendix and number 25, all in complete and explicit detail, the whole forming a full symposium of the valuable work conducted by the Branch.

DAIRY AND COLD STORAGE BRANCH

Cherry Pre-Cooling Possibilities. Such is the title of Circular 15 of the Dairy and Cold Storage Branch, of which Edwin Smith, in Charge Pre-cooling and Fruit Transportation Investigations, is the author. During the season of 1914 the Niagara district fruit-growers were facing a large cherry crop and a poor market. In order to demonstrate the possibilities of pre-cooling and shipping sour cherries to the Northwest, an experimental shipment of Montmorency cherries was made to Winnipeg, details of which may be found in Vol. 1, 1914, August, page 620 of THE AGRICULTURAL GAZETTE. During the present year further trial shipments were made with the Early Richmond cherry which is reputed to have poorer carrying qualities than the Montmorency. The results of this shipment together with information relative to the package best adapted to sour cherries, are outlined in the circular and in a special article on page 1050 of this issue of THE AGRICULTURAL GAZETTE, specially prepared by Mr. Smith.

Causes of Variation in the Percentage of Fat in Hand Separator Cream is the title of Circular No. 14 of the Dairy and Cold Storage Branch, and of which Mr. Geo. H. Barr, Chief, Dairy Division, is the author.

Patrons of cream gathering creameries frequently complain of the variations which occur in the percentage of fat as revealed by the test of the cream delivered from time to time. These variations have given rise to more or less dissatisfaction on the part of the patrons, and have been the cause of unnecessary friction between them and the managers of creameries.

A series of tests and experiments bearing on this point have just been completed at the Finch Dairy Station and the results are published in this circular with a view of explaining how such variations may be due to irregularities in the running of the cream separators. In nearly all separators the proportion of cream is regulated by what is termed a "cream screw." "Considering the question of separation from a purely mechanical standpoint," says the author, "one would naturally come to the conclusion that once the cream screw is set at any desired point, the separator would always deliver cream containing the same percentage of fat." However, other factors which very naturally affect the working of a cream separator should be considered; these are (1) the percentage of fat in the milk; (2) the temperature of the milk; (3) flow of milk into the separator, and (4) the speed of the separator. The circular contains four tables showing the effect of separating milk under conditions featuring the foregoing considerations; the results therein indicate that different conditions in the milk and only slight changes in the operating of the separator, without changing the cream screw, will make wide variations in the percentage of fat in the cream.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

PRINCE EDWARD ISLAND

Summary of Results of Competitions in Fields of Standing Grain, 1915. This forms a 20-page booklet recently issued by the Prince Edward Island Department of Agriculture, giving complete details relative to the competitions, and the scores of each competitor. There were 262 entries, of which 134 were in oats, 107 in wheat, and 31 in barley. It is worthy of note that in oats, 9 varieties were grown; 104 competitors growing Banner; 21, Old Island Black; 3, Ligowo; other varieties grown were No. 72, Norway, Big Four, Thousand Dollar and Gothland. In wheat 46 competitors used the White Russian variety,

26 the White Fife, and 5 grew Marquis. In barley the varieties used include O. A. C. 21, Chevalier, and Mensury.

QUEBEC

Seventh Annual Report of the Quebec Society for the Protection of Plants from Insects and Fungous Diseases, 1914-15. This report, printed in French and in English, forms a supplement to the report of the Department of Agriculture and contains the proceedings of the winter meeting of the Society held at Macdonald College in March, 1915. It also includes the list of officers, resolutions and the following papers and addresses: President's address, W. Lochhead, Macdonald College; The Web of Life, W. Lochhead; Some Successes and Failure in Controlling Insects in 1914, C. R. Crosby, Cornell University; Aphrophora spumaria, Cuckoo Spit, J. C. Chapais; Nursery Inspection in the province of Quebec, Rev. Father Leopold; The Control of Potato Diseases, H. T. Güssow; Medicinal Plants of Quebec, John Adams; Some Silent Invaders of our Fields, Bro. Victorin; The Brown-tail Moth in New Brunswick, E. H. Strickland; Butterflies in Nature and in Books, A. F. Winn; Forest Insect Conditions in Stanley Park, Vancouver, R. N. Chrystal; Some Insect Parasites of the Bud Moth, E. M. DuPorte; The Tent Caterpillar and Aftermath, A. F. Winn; Two Bacterial Diseases of Injurious Insect Larvæ, E. M. DuPorte; Apple Leaf Spot or Black Rot Canker, R. I. Bryce; Shade Tree Insects in Quebec, J. M. Swaine; The Cereal Rusts, W. P. Fraser; Principal Injurious Insects of the Season, 1914, W. Lochhead; Insects Affecting Shade Trees, Greenhouse Plants, Domestic Animals and the Household, W. Lochhead; Useful Keys to Some Economic Families of Insects, W. Lochhead.

ONTARIO

Report of the Ontario Veterinary College, 1914. This 40-page report, issued by the Ontario Department of Agriculture, contains a complete description of the new college building opened in 1914-15, with illustrations and floor plans of same. The building consists of a four-storey, fire-proof, steel framed structure and covers an area of 10,077 square feet; with a total cubic capacity of 898,500 cubic feet, and a maximum height of 85 feet. Following this is the time table of lectures and demonstrations for each of the fall and spring terms. The total number of students in the fiscal year from October, 1913, to November, 1914, was 332, with 235 of this number from Canada, 87 from the United States, 4 from Great Britain and 6 from other countries. The registration from Ontario

was 91. In the spring of 1914, 81 students were graduated and granted the degree of Veterinary Surgeon (V.S.) from the college; in June, 9 members of the class received the degree of Bachelor of Veterinary Science (B. V.Sc.) and one member of the class of 1911 received the degree of Doctor of Veterinary Science (D. V.Sc.) from the University of Toronto. The report also contains the prize essays prepared by students, the constitution and by-laws of the Science Association of the Ontario Veterinary College, a brief synopsis of methods adopted in teaching the various branches of veterinary science, and in an appendix appears the text of an address delivered at the commencement exercises of the college on April 24th, 1915, by the Honourable William Renwick Riddell, L.H.D., Justice of the Supreme Court of Ontario, on the subject of "The Graduate and the Country." Numerous illustrations of actual student operations enhance the value and interest of the report.

Fruit Branch Circular, Ontario Department of Agriculture, September, 1915. This four-page pamphlet may be styled a brief compendium of information relative to Canadian apples. The pamphlet opens with statements concerning the gifts of fruit and vegetables of the Quebec Branch of the Navy League to the vessels of the fleet in the North Sea and the gifts of fruit of the Ontario Government to the Canadian wounded in hospitals of Great Britain and France; then follows a review of the advertising methods of the Department of Agriculture and The Fruit Growers' Association of British Columbia. The Canadian apple is treated under the following heads:

"This Season's Markets for Canadian Apples," "Prices for Fall Apples," "The Fruit Marks Act," dealing with the marking of fruit and fruit packages.

SASKATCHEWAN

The latest bulletins for posting issued by the Department of Agriculture refer to brand renewals and cancellations; the annual sheep and swine sale on October 27th; the market prices for stock from August 1st to September 11th and the habits of wild oats.

BRITISH COLUMBIA

Women's Institutes, Annual Report, 1914. In British Columbia the report shows that, as in all other provinces of the Dominion, the Women's Institute is increasing in numbers, constantly developing new spheres of usefulness, and progressing rapidly in influence. At the end of 1914 in this province there were 48 Women's Institutes, an increase for the year of 13. Of members there were 2,802, an increase

compared with 1913 of 897. This is an increase of 35 per cent in the first instance and of over 45 per cent in the other. All the institutes received a two weeks' course of tuition in cookery and dressmaking. Six hundred and forty-five meetings were held in the year, the total attendance being 12,260, giving an average attendance of 19. Financially the institutes are strong, as is proven by the fact that the aggregate revenue was \$11,331.08 and the expenditure \$9,038.51, leaving a credit balance of \$2,292.57. Flower shows were held with much success, the Department of Agriculture allowing 25 cents per member toward the expenses and supplying suitable book prizes for both adults and children. District conferences that were well attended were held at New Westminster, Duncan, Nelson and Summerland. At these conferences, full reports of proceedings were presented from the majority of the institutes, notes of which are given in this comprehensive annual statement, which also contains a variety of informative papers by leaders of the movement. The principal feature of the second half of the year was of course the splendid work performed for the benefit of the troops at the front and in camp. Taking the money collected by the Women's Institutes and expenditure from their own funds, the total raised, the report states, was no less than \$6,623.54, made up as follows:—

War funds	\$4,319.44
Schools	1,075.20
Institute equipment, ground, etc.	350.40
Home relief	249.70
Fairs and competitions	266.50
Christmas for children	221.70
Churches and hospitals	140.60
Total	\$6,623.54

Appendices to the report supply detailed tables of receipts and expenditure, membership, records of attendance, etc., at meetings, and a complete calendar of the institutes, giving the names of presidents and secretaries and days and place of meeting.

The Use of Agricultural Lime in British Columbia, by W. Newton, Soil and Crop Instructor, constitutes Circular Bulletin No. 14 of the Live Stock Branch of the Department of Agriculture. In the introductory paragraph the author states that a large proportion of the soils of British Columbia are in need of lime for three very important reasons—to improve the texture of the soils, especially heavy clays; to make plant-food in the soil more available to crops; and to serve as a plant food. One of the chief functions, however, of lime is to correct acidity in soils, which very often tends to check the growth of alfalfa, clover and other valuable leguminous plants. To detect soil acidity the use

of blue litmus paper is described and explained. "Agricultural Lime" may be purchased in various forms and as a guide to farmers in purchasing, the comparative value, based on the amount of calcium, of the different forms are set forth as follows: Quicklime, \$5.35; water-slaked or hydrated lime, \$4.05, and ground limestone rock, \$3.00 per ton. The four-page pamphlet closes with general directions and suggestions with regard to the methods of applying the different forms of lime.

Angora and Milch Goats; Bulletin No. 64 of the Department of Agriculture of British Columbia, compiled by S. H. Hopkins, B.S.A., Assistant Live Stock Commissioner. In the introduction to this bulletin of 37 pages, 13 of which are devoted to the Angora Goat and the remainder to the Milch Goat, the author advances the many inquiries received for information relative to Goats, and their economic importance in mountainous countries as reasons justifying the publication of a bulletin on this subject. Milch goats in Germany and Switzerland alone have yielded close to \$60,000,000 worth of products; they are distributed in many countries, taking the place of milch cows in the countries bordering on the Mediterranean and in Asia. Angoras are established in a few countries only—mainly in Turkey, South Africa, Australia, and the United States. In the latter country the Angora-goat industry is making rapid strides, these goats now numbering over one million with an average clip of nearly 5,000,000 pounds of mohair worth 34 cents per pound. Besides this the United States each year imports about 2,000,000 pounds of mohair, whilst England imports about 20,000,000 pounds annually from Turkey and South Africa. With these facts showing the economic importance of goats and the adaptability of much of British Columbia to goat raising, the author deals fully with each type, pointing out in each case its primary importance and general methods of treatment to receive good results and reap value from their upkeep.

Horticultural Board Regulations. Under this caption there has been published, in pamphlet form, by the department of Agriculture of British Columbia, the regulations made and published under the authority of Part VI of the Agricultural Association Act, 1914, having been approved by order in Council in August, 1914. These regulations as outlined, provide for the inspection and fumigation of all imported nursery stock and plants at the Provincial Inspection station at Vancouver, and imported fruit or vegetable products, whether imported or grown in the province, for labelling of nursery stock or plants. A penalty of not more than

\$100 is provided in cases of violation of specified sections and subsections of the regulations and for other offences. A scale of inspection and fumigation fees is included in the regulations.

The Women's Institute Quarterly is the title of a new publication of the Department of Agriculture of British Columbia. Number one, of volume one, published in October, 1915, has been received. In his foreword, W. E. Scott, Deputy Minister of Agriculture and Superintendent of Institutes, states that this new departure is the result of the recognition of a lack of means whereby institutes may be kept in close touch with the work each is accomplishing. This publication is expected to fill this gap, to tend towards more effective co-ordination of effort and closer co-operation and sympathy between institutes; to help to systematize the efforts of institutes in their endeavour to ameliorate the conditions as affecting women in the rural districts and to elevate the general standard of living.

Thus it is that this bulletin will form a link between the long chain of Women's Institutes which extends across the whole province; will promote unity, sympathy, co-operation, and furnish stimulus and encouragement. The issue for October contains an article entitled "Notes on some Points in the Making and Judging of Bread" by Miss A. Ravenhill; reports of the conferences of Women's Institutes held at Victoria, Chilliwack, Salmon Arm and Nelson; a number of selected programmes for conventions, for a year; and the syllabus of lecture-work arranged by the Department of Agriculture for the fall of 1915.

MISCELLANEOUS

Canadian Seed Growers' Association, eleventh annual report, the year ending March 31st, 1915. Divided into two parts, the report is a publication of 126 pages, the first part being devoted to lists of operating members and minutes of the annual meeting held on March 11th, this year, in the Railway Committee Room of the House of Commons, Ottawa, and the second part to addresses and contributions. In the reports of the officers the extensive operations of the association are explicitly detailed. Among the motions passed at the meeting were resolutions of appreciation of the co-operation and support given by the Dominion and Provincial Departments of Agriculture, of accommodation and substantial aid granted by the Hon. the Minister of Agriculture for the Dominion, of the work done by the Provincial Department of Agriculture at Quebec and of the addresses and papers presented at the convention. The speakers

and contributors referred to, all of whose remarks are printed in full and furnish interesting studies, were Dr. Jas. W. Robertson, the president; Dr. C. C. James, Commissioner of Agriculture; Mr. J. H. Grisdale, Director of Experimental Farms, Ottawa; Dr. Charles E. Saunders,

Dominion Cerealist, and Mr. George H. Clark, Dominion Seed Commissioner.

The last fifty pages of the book are devoted to reports of annual meetings, with addresses delivered by the leading members of the branches in the different provinces.

NOTES

The secretary of the Saskatchewan Grain Growers' Association announces that the farmers of that province have contributed for patriotic purposes the crop from 5,000 acres, representing approximately 100,000 bushels of wheat, or 5,000,000 pounds of flour. Among those who contributed are some Austrian and German farmers. The wheat is to be ground into flour, and assurance has been received from the Dominion Government that it will be transported to Liverpool free of cost to the fund. It will be a gift from the Saskatchewan grain growers to the Imperial Government.

P. P. Woodbridge, Provincial Secretary of the United Farmers of Alberta, has issued a circular to members directing attention to the activities of the organization and calling for a return of amounts subscribed, among other objects, for the U. F. A. Patriotic Fund, the Belgian Relief Fund and the Red Cross Fund. When President W. J. Tregillus died last year special "In Memoriam" folders were prepared for sale at 5 cents each, the proceeds to be devoted to the Red Cross Society for the endowment of beds in the Canadian Hospitals in England for wounded soldiers. Four beds have already been provided in this way and it was hoped to double the number by November 12th, the anniversary of the late president's passing, when the fund will be closed.

The Agricultural returns for England and Wales show a decline of 61,000 pigs, and although the number is not large, it is viewed with alarm at the present time when the cost of bacon is advancing. In normal times 60,000 Dutch and Danish pigs are imported by England weekly. To-day, however, no supplies are received from Dutch sources and Danish prices are extremely high. To add to the burden of the market, most of the Irish supply is claimed by the Government for military purposes, consequently, prices have risen enormously. Hogs are now costing in Birmingham 16s. (\$3.89) per score, compared with 12s. (\$2.92) in September of last year, and 10s. 3d. (\$2.49) before the outbreak of war. The wholesale selling price of bacon is 112s. (\$27.25) per side compared with 86s. (\$20.92) last September.

The preliminary statement of the agricultural returns for England and Wales collected in June last shows a decrease in the total area under crops and grass of 61,000 acres, 33,000 acres representing arable land, and 28,000 acres permanent pasture land. Wheat acreage shows an increase of 363,000 acres (20 per cent) compared with last year. Oat acreage shows an increase of 158,000 acres, and barley a decrease of 273,000 acres.

Increases of cattle and sheep are recorded, but there are decreases of horses and pigs. Horses have decreased by 112,000 to 1,287,180 (8 per cent). Cows show a decline of 50,000 compared with the previous year, but all other cattle have increased by 186,000, the total number 6,064,000 being the highest on record. Sheep have increased in number by 263,000, but an unfavourable lambing season has caused a reduction of 101,000 in the number of lambs.

In an address to the students of the Ontario Veterinary College on the occasion of the opening exercises, Dr. C. C. James, Commissioner for Agriculture, in emphasizing the importance of the live stock industry spoke as follows:—"In the twelve years preceding the present war Great Britain had a ten per cent increase in population and only four per cent increase in cattle. Germany also had a four per cent increase in cattle, but had a sixteen per cent increase in population. The Argentine, which was supposed to have an inexhaustible supply of cattle, had increased its population by 40 per cent, while it had an actual decrease in live stock of six per cent. In the United States there was a decrease in cattle amounting to 30 per cent, whereas the people had increased 24 per cent, while Canada against an increase in population of 34 per cent, had a cattle increase of only 17 per cent. Statistics of the consumption of meat in various countries showed that the people of Great Britain consumed 120 pounds per head per annum; those of Germany, 113 pounds; Russia only 50 pounds, whilst Canadians consumed 175 pounds per head, and the people of the United States, 186 pounds. But the greatest meat eaters of all were the Australians who managed to get through 260 pounds each every year."

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

The Agricultural Gazette of Canada

EDITOR: J. B. SPENCER, B.S.A.

Issued by direction of
THE HONOURABLE MARTIN BURRELL
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OF CANADA

VOL. II

DECEMBER, 1915

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TO THE FARMERS OF CANADA

IN the AGRICULTURAL GAZETTE of September, 1914, a message was addressed to the farmers of Canada. It called their attention to the war conditions in Europe as they affected agriculture and the consequent urgent necessity for a greatly increased production in Canada, happily far removed from the fearful horrors of war and free to use her best efforts to strengthen the Empire in its struggle against the tyranny of military despotism. To the call for men, and more men, Canada has nobly responded and every day sees fresh battalions on their willing way to the Empire's battle line. To the unceasing and unselfish work of the women of Canada we all pay a heartfelt tribute, and the patriotic activities of our people in the cities and towns have made life a finer thing than it was before. But those concerned with the production of that which is the life-blood of armies in the field have been no whit behind. The farmers of Canada, realizing as perhaps never before the important part that the production of food stuffs plays in such a gigantic struggle, looked upon their calling and responsibilities with deeper respect and broader view, and made strong efforts to give their assistance by increasing production along all possible lines. To what extent, small or great, the appeal made last year was responsible for this, I cannot tell, but in any case I gladly here express my own and the Government's deep appreciation of the fine response made. The results have surpassed expectations. Canada from her abundance can help supply the Empire's needs, and this must be a comforting thought for those upon whom the heavy burden of directing the Empire's affairs has been laid. Gain or no gain the course before the farmers of Canada is as clear as it was last year—they must produce abundantly in order to meet the demands that may be made, and I believe this to be especially true in regard to live stock, the world's supply of which must be particularly affected in this vast struggle. Stress and strain may yet be in store for us all before this tragic conflict is over, but not one of us doubts the issue, and Canadians will do their duty in the highest sense of that great word.

MARTIN BURRELL,
Minister of Agriculture.

MOSES FRANKLIN RITTENHOUSE

BY DR. C. C. JAMES, COMMISSIONER OF AGRICULTURE

WHEN a man makes his mark in commercial, professional, or political life it is customary to begin a biographical sketch of his career, if possible, by referring to the farm on which he was born. Many, very many boys on the farm, in the reading of such a biographical newspaper sketch, have had their thoughts thus turned toward city life. Many of these farm boys have amassed wealth in the city and have left monuments of their prosperity in the form of hospitals, libraries, colleges and other buildings for the care, education and amusement of city boys and girls. How few of them have remembered the boys and girls of the countryside! It would almost seem that many of these men have forgotten the place of their birth and boyhood and have failed to realize the wonderful possibilities of rural benefaction.

In the life of Mr. Rittenhouse there is one of the most interesting stories of Canadian rural history. Here was a man who never forgot his boyhood days and his boyhood friends, one who took the keenest of delight in the improvement of his early rural home district. And what pleasure he derived from it! Only those who knew him realized this, and they did not fail to have a share in his enjoyment.

Mr. Rittenhouse was born on a farm in Lincoln County, Ontario, nearly seventy years ago. The lure of the West took him to Chicago in 1864, and there he acquired an ample fortune. But he remembered the little stone schoolhouse by the roadside near the lake. It was plain and unattractive. He came back, bought a small farm near by, and on one corner built a beautiful brick school,

fitted it with an excellent equipment, laid out ornamental grounds, set up a stately fence, and provided facilities and attractions such as any city school would be proud of. Across the road he erected a hall for the use of the people, provided a water service and installed a lighting plant. Then he transferred to the Ontario Government the balance of the farm for an experimental fruit station, adding to it another 50 acre farm to complete the scheme. An old narrow dirt road ran past these properties from the lake to the main highway. These two miles must be improved. So he bought land and widened the right of way and built a fine stone road, with a stone walk at the side, set out trees and shrubs, and over the creek that crossed the road he constructed an attractive cement bridge. And many, many other things he did. About the last was to purchase a piece of land to enlarge the burial ground at the old Mennonite Church near by. This improvement had hardly been completed in time to receive his own body, which was laid to rest on the tenth of October, 1915.

Victoria Hall, which he gave to the people, was unable to hold the great crowd on that day, for the whole countryside came to his funeral. Friends were there from long distances and the children of the Rittenhouse school sang songs to his memory. For years to come the story of his life will be told in the school. About the firesides memories will be revived of the annual picnics in the grove and the entertainments in the hall. Students of the Agricultural College will tell of how he took a whole class to the Fat Stock Show at Chicago. It would take a full

issue of this journal to recount what this plain-living, pure thinking, pleasant mannered man, a Canadian descendant of the old Philadelphia Rittenhouse family, did for the people of his boyhood home. It would not be his wish that all should be disclosed.

And prosperity has come to Vine-land, for there is an advantage in living on the Rittenhouse road, where neat houses are going up, a new church is under construction, and land values have risen. A few years ago there was no railroad station; the officials could not see what was coming, and the Dominion Railway Commission had to be appealed to. What was done? The people provided the land and the

Ontario Department of Agriculture loaned the money to build the station. In less than two years this loan was repaid with interest. Yes, there is a good investment in good schools and good roads. Mr. Rittenhouse knew this. The best results, however, are not in increased farm and orchard products but in the improved social and moral life of the community.

We know of no other work in Canada just like this, but perhaps some other prosperous Canadians may learn to know the joy and pleasure and satisfaction in contributing to rural improvement. Recollections of M. F. Rittenhouse are very dear to those who knew him; for others a knowledge of his work should be interesting and stimulating.

NOTE: See also AGRICULTURAL GAZETTE, Volume one, July, 1914, page 522.

BOUNTIFUL SOUTHERN ALBERTA

"Then we passed on to the Crows' Nest Pass road to Lethbridge and Fort Macleod. Talking to some of the farmers here they said: 'Talk about wheat this year! Whal, whal, wheat grows everywhere!' One farmer came into Macleod and said that he had offered his farm for sale for \$800 last year. Now that self-same farm had grown 8,000 bushels of wheat this year and it runs 63 bushels to the acre and 67 pounds to the bushel, and you cannot buy that farm any more for \$800, as it is worth \$8,000. Another farmer stated that he had grown on one piece 84 bushels to the acre because it had been double seeded by mistake (having changed his hired man). Another came in and told me that he thanked God we had a good government, who had given them seed in Southern Alberta this year. When he heard about free seed he went and got some of it, but had no time to do spring ploughing so he disked it in on stubble and 'then,' he said, 'the gol' darn thing run 40 bushels to the acre all the same. The funny thing about it, all I had to do was put the wheat in stook and it threshed itself and 'gone' to the elevator.' When asked how this happened, he said, 'the sheriff had taken it and he threshed it and marketed it and then he had enough money out of it to pay all my debts and hand me back \$4,000 in cash. You bet it is the greatest wheat crop he ever saw.' So much for Southern Alberta."—E. F. Hutchings in *The Monetary Times*.

PART I

Dominion Department of Agriculture

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED

THE DOMINION EXPERIMENTAL FARMS

THE DIVISION OF FORAGE PLANTS

FEEDING VALUE AND CHEMICAL COMPOSITION OF VARIETIES OF FIELD ROOTS

BY M. O. MALTE, PH.D., DOMINION AGROSTOLOGIST

THE value of a variety of mangels, turnips, carrots or sugar beets depends, as is well known, not only on its actual yielding power, as expressed in tons or bushels to the acre, but also on its chemical composition, as expressed by its dry matter content. This fact, now universally recognized, has been experimentally proved over and over again. Suffice it to refer, e.g., to the experiments made by Professor Middleton (Proc. Cambridge, Phil. Soc. 16, 1910, No. 1) in order to ascertain the feeding value of certain varieties of mangels in proportion to their dry matter content.

Among the mangels chosen for the purpose were Long Red and White Fleshed Globe. The former variety produced over half a ton of dry matter to the acre more than did the latter. In a series of seven feeding trials with two lots of animals, one lot received, as portion of the ration, a certain quantity of the White Fleshed Globe, and the other the same quantity of the Long Red. At the conclusion of the experiment, it was found that the increases in live weight of the two lots of animals

were in the proportion of 100: 116.4 in favour of the Long Red. In other words, the experiment revealed a difference of at least 10 per cent in feeding value in favour of the variety having the higher dry matter content.

That the percentage of dry matter, or rather the amount of dry matter, produced by a variety of field roots to the acre, should be taken as an index of its feeding value was realized long ago by the Experimental Farms system. Accordingly, a series of investigations was instituted, more than fifteen years ago, by the Division of Chemistry, the object being to demonstrate by means of chemical analysis, the importance of chemical composition as a value factor in field roots.

The data on the subject, as published in the annual reports of the Dominion Chemist, clearly demonstrate, among other things, that the percentage of dry matter normally found in a variety is a more or less fixed varietal character. The importance of this, to the practical farmer, will be made clear by the following example.

The average dry matter content for the years 1900-1913, of the Gate Post mangrel, was 11.49 per cent as compared with 9.47 per cent in the Giant Yellow Globe. This means that one ton of Gate Post contains 229.8 lb. of dry matter whereas the Giant Yellow Globe contains only 189.4 lb. Taking the dry matter content as an index of the feeding value of the varieties in question, it follows that one ton of Gate Post is equivalent, in feeding value, to one ton 425 lb. of Giant Yellow Globe approximately. In other words a crop of 30 tons to the acre of Gate Post corresponds, as far as actual food value is concerned, to a crop of 36 tons 755 lb. of Giant Yellow Globe.

Another example may serve to demonstrate the importance of taking into consideration, when calculating the comparative value of different varieties of turnips, their relative dry matter content.

The Corning's Lapland and Perfection, both Swede turnips, yielded in the season of 1913, 25 tons 550

lb. and 25 tons 500 lb to the acre, respectively. If the yields alone be considered, the conclusion drawn from the above figures would indicate that the varieties mentioned were of about equal value to the farmer. This is, however, far from being the case. The chemical analysis shows that the dry matter percentage in Corning's Lapland was 10.70 per cent, whereas in Perfection it was only 9.20 per cent. This means that the former variety produced 2 tons 1409 lb. of dry matter to the acre, whereas the latter yielded only 2 tons 646 lb. In other words, the Perfection produced about 15 per cent less food constituents than did Corning's Lapland.

Many other examples could be quoted, were it necessary, to demonstrate that the value of a variety of field roots is most intimately connected with its dry matter content. The above will suffice, however, to emphasize the advisability and profitability of considering the chemical composition as well as the yielding capacity in the selection of varieties for stock feeding.

THE TOBACCO DIVISION

THE CROP OF 1915

BY F. CHARLAN, CHIEF

ALTHOUGH the tobacco crop of 1915 is not completely cured as yet, it is already possible to indicate the results of some of the experiments carried on this season.

The experiment on pipe tobacco shows that it is possible to acclimatize, at least in some parts of Canada, a strain of Maryland, very productive, of average earliness, with thin leaves and a light colour.

As regards tobacco for fillers, we now have the choice of the following varieties: the Aurora, some strains of Belgian tobacco and the Big

Havana, in addition to the Comstock Spanish. In making a choice, one must take in consideration the climatic conditions of the locality. The possibility of producing really aromatic tobacco, with a pleasant taste, in Canada, is becoming more and more evident. The only objection, however, is the strength of the native strains of tobacco, but this can be corrected with time.

As to tobacco for "binders," although the season was unfavourable, our strains of Yamaska and of Big Ohio x Sumatra grown on the Farnham station, have given fine crops with a more than average yield.

THE DAIRY AND COLD STORAGE BRANCH

THE GRIMSBY PRECOOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE

REVIEW OF THE SEASON'S WORK

BY EDWIN SMITH, B.Sc., OFFICER IN CHARGE

THE work at Grimsby has been divided into — (1) commercial cold storage and the precooling of fruit for the general public; (2) demonstrations in fruit handling, packing, precooling and transportation; (3) experimental refrigeration tests. To handle this work the services of Mr. J. M. Creelman, B.S.A., were secured on May 15th, as Scientific Assistant, and from June to July a warehouse foreman was employed.

PROGRESS IN PRECOOLING

The first car of strawberries was precooled June 28th, and shipped to Winnipeg by refrigerated express for the Vineland Growers' Cooperative. The berries arrived in Winnipeg without decay, but the sales were light owing to a poor market, so that from an economical point of view the shipment was a failure. The fruit was ripe at the time of forwarding and was shipped in the Ontario 24-quart crates, which is the poorest strawberry package that can be used for such purpose. The berries arrived in a fair condition, so that from a physical standpoint the venture was successful and further trials are to be made.

The first car of precooled cherries for the season was shipped jointly by the Department of Agriculture and the Grimsby Fruit Growers and the Winona Fruit Growers. The consignment was made up of Early Richmond and a few test cases of Black Tartarian cherries. It embodied experiments in precooling

and in shipping these cherries in the 6-quart basket, 4 basket crate, and with the Black Tartarian in strawberry crates.

OPENING OUTLETS FOR ONTARIO CHERRIES

This initial shipment was a severe test for the Early Richmond, as it was held under refrigeration for ten days from the time of picking, but it reached Winnipeg in good condition. Since freight shipments now have an eight-day despatch from Grimsby to Prince Albert, Sask., it is possible to place Ontario cherries in as far-off a market as this.

A deal of interest was shown in the shipments of sour cherries to the west, totalling ten cars for this season against one car—(experimental shipment by the Department of Agriculture)—during the season of 1914. This is an increase of approximately 900 per cent. During 1915 no markets were worked further than Winnipeg. There proved to be a stiff demand for sour cherries in Brandon, Moose Jaw, Portage La Prairie, Regina, Saskatoon and the outlying districts. Indeed, these markets should be able to consume all the sour cherries Ontario will have to spare for a number of years to come.

The precooling of plums was very successful. Shipments were more active and gave more satisfaction than in 1914, since better care was given by the growers to the maturity and condition of the fruit. The

greatest distances that precooled plums were shipped were to Prince Albert, Saskatchewan, and Glasgow, Scotland. The increase in the commercial shipments of precooled plums, and other fruits as well, are allaying the fears of the shippers and the "trade" relative to the keeping quality of precooled fruits upon removal from the refrigerator cars. One lot of Burbank plums brought back to Grimsby from Brandon, Manitoba, in the travelling bag of a fruit salesman, was in good condition several days after his return.

TOMATO PRECOOLING A SPECIAL PROBLEM

During 1914 shippers were unsettled in their opinion as to the advisability of precooling tomatoes. One shipment of over-ripe stock met with bad results, and the cause of the loss was attributed to precooling. Demonstrations this year have shown that it was not a question of precooling so much as one of maturity. Besides special experiments along this line, the shippers have been paying close attention to consignments. It has been found that tomatoes picked without colour do not properly ripen, or advance in colour during shipment, or after removal from the car when precooled and shipped under refrigeration, arriving on the market pale, dull and unattractive. It has been found advisable to allow the tomato to ripen till nearly a full red before picking for a precooled shipment. However the tomato must be firm and free from cracks.

The Bartlett pear is being handled through refrigeration to a greater extent than formerly, owing to its tendency to ripen quickly after picking. Precooling checks its ripening and insures its shipment to the prairies in good condition. Export shipments of Bartletts, held in storage four weeks prior to shipment, have not proven successful.

Although the pears were in apparently prime shape at the time of shipment, ripening had undoubtedly gone too far, so that seven days on board ship badly affected the pears.

FEW PEACHES PRECOOLED

Very few Ontario peaches were marketed in the Prairie Provinces during the past season, consequently few precooled shipments were made. The small westward movements were due to fairly good local demands in the early part of the season, coupled with a late crop and poor prices in western markets during the latter part of the season. The latter may be attributed to: (a) a large consumption of California, Washington and British Columbia peaches before the Ontario shipping season had started, and, (b) the lower cost of Washington and British Columbia fruit.

The peach shipments made were very successful from a physical standpoint. A shipment of Early Crawford's was held two weeks under refrigeration and arrived in Winnipeg in good condition. A successful shipment of Elbertas was made to Glasgow, Scotland. The farthest western shipment was to Prince Albert, Saskatchewan. If peaches are properly picked, and packed with varieties of good carrying qualities, there is no question as to the success of precooled shipments.

COMMERCIAL STORAGE

At all times during the fruit season growers availed themselves of cold storage space, raspberries, plums, pears, peaches and apples being the principal commodities stored. The availability of cold storage space to growers, shippers and canners for the holding of fruit over the weekend, or at a time of glutted markets, is proving one of the biggest features of cold storage situated at fruit shipping points.

PACKING DEMONSTRATIONS

Many failures in long distance shipments result from poor packing, or from using packages not adapted to such shipments. The advantage of precooling is not great if proper packages are not used. Taking this into consideration demonstrations were made in large lots with various packages for strawberries, cherries, tomatoes and peaches. Such shipments showed that the Ontario 24-quart strawberry crate is poorly adapted to its present use. In Winnipeg this package sold for 10 cents less than the 24-pint hallock crate, the latter holding about half the amount of fruit that the former did. In local shipments the cups cannot be well filled without crushing the fruit. Data were secured to be used in urging the growers to supplant or improve this package during the coming season.

BRITISH COLUMBIA CHERRY PACKAGE

A test was made in shipping sour cherries packed direct from the tree in the 6-quart basket, repacking in the 6-quart basket, and repacking in the British Columbia 4-basket crate. Inspections in Winnipeg showed that the least amount of waste was to be found in the fruit that was picked and packed direct from the tree. The cost of this package and its packing was less than the British Columbia 4-basket crate and the net returns to the growers were 4.78 cents per pound as against 4.24 cents per pound in the 4-basket crate. British Columbia growers should cease using the 4-basket crate for sour cherries.

With sweet cherries the best net returns were secured in the Winnipeg market by using the 24-pint hallock strawberry crate. The 24 4-5-quart hallock strawberry crate and the 6-quart basket were next in order.

Various tests were made with the Northwest peach box, the Michigan bushel, the 11 and 6-quart baskets in crates with peach shipments. At

the time this is being written results are not available for publication. This is also true with regard to the 4-basket crate, 11-quart basket and Michigan bushel for tomato shipments. However, it is evident that the Northwest standard box is proving one of the best packages for long distance peach shipments, and that the 4-basket crate is well adapted to tomato shipments.

EXPERIMENTAL WORK

The rate of cooling of fruit in different packages when subjected to temperatures of from 12 to 16 degrees, 32 degrees and 40 degrees, has been a matter of study. The variance is found to be great, and the work shows how quickly the precooling of tender fruits may be done, providing the outside of the packages is surrounded by the stated air temperatures. From four to six hours—depending upon the type of package and fruit—is the minimum time required to do precooling from the average orchard temperature (75 degrees) to from 40 to 42 degrees, the average refrigerator car temperature.

EFFECTS OF RAPID AND GRADUAL COOLING

In conjunction with the rate of precooling, the different lots which were cooled rapidly and gradually were studied after precooling and storage to ascertain the effect, if any, of the rapid cooling, and also the effect of the gradual cooling, noting whether rapid cooling injured the keeping qualities of the different fruits. With cherries, plums, pears and peaches no harm is found to result from using a temperature of 12 degrees, providing the cooling process is stopped before the temperature of the fruit reaches 32 degrees. No benefit was to be found from gradual cooling, other than to insure against freezing the fruit in the outside of the package. Work with berries has not been carried out

far enough to make a statement in this connection.

A great many variety tests have been made both in refrigerator car temperatures and at 32 degrees with the more important varieties of tender fruits, securing valuable information as to the shipping and storage possibilities of each.

Further tests with the use of brine tank refrigerator cars for fruit shipments have been made. When iced in the ordinary way former experiences were repeated, resulting in high temperatures and poor carrying of the fruit. By using 5 per cent salt in the initial icing only, very good results were obtained in two Winnipeg shipments. No freezing resulted, low temperatures were secured—from 33 to 38 degrees—and the loads carried in splendid shape.

A study of the degree of maturity at which fruits should be picked for precooled shipments has been made with strawberries, cherries, tomatoes, and peaches. It is evident that fruit must not be ripe for long distance shipments on account of its firmness and texture. However, other conditions being the same, more maturity may be allowed for precooled shipments than when shipped under ordinary refrigeration. This phase of the work will be treated more fully in a future issue of THE AGRICULTURAL GAZETTE.

Projects are under way for the fall and winter, covering the cold storage of grapes (*Vinus labrusca*) and celery, together with an investigation of the refrigeration of flowers grown under green-house conditions.

THE MANUFACTURE OF SMALL CHEESE AT THE FINCH DAIRY STATION, FINCH, ONT.

BY GEO. H. BARR, CHIEF, DAIRY DIVISION

CONSUMERS to-day much prefer buying their groceries and provisions in the original package instead of having the retailers measure or weigh the order from bulk. Not many years ago, the whole supply of milk and cream used in our towns and cities was delivered to customers from large cans into open pitchers or other vessels, which were often left outside on the door steps exposed to the dust of the streets; a pound of butter was indifferently scooped from a tub or crock and wrapped in ordinary paper. To-day, milk and cream are delivered in neat, clean, well-stoppered bottles, the pound of butter is neatly wrapped in parchment paper, and many other things are handled in a similar manner. The customer's order for Canadian cheese, however, is still cut from the large cheese on the counter, where it is kept exposed to the atmosphere, which both dries

the surface and spoils the flavour, while the piece bought continues to dry out when taken home. This all tends to make the retail selling of Canadian cheese unpopular both to the seller and the consumer.

Last year the Dairy Division tried as an experiment the making of one-pound cheese at the Finch Dairy Station. Two styles were made, an oblong block and one the same shape as the ordinary Cheddar cheese. A few of each style were placed in the hands of grocers in Ottawa. The oblong style did not prove satisfactory to the trade. The other, or cylindrical, style, however, proved quite a good seller, and has been growing in favour rapidly during the present season. It is $3\frac{1}{2}$ inches in diameter and 3 inches high. The hoops in which these cheese are pressed are made of heavy tin $3\frac{1}{2}$ inches in diameter and $4\frac{1}{2}$ inches high with a loose tin bottom resting

on a narrow ledge which is made by turning in an eighth of an inch of the sides. The followers are wood 2 inches thick. By placing both thumbs on the loose bottom, the cheese can be pushed out of the hoops quite easily. In putting the curd in the hoops, a very light piece of cotton is placed in the hoop similar to the bandage on ordinary cheese, and 18 ounces of curd weighed into each hoop. They are then pressed over-night. The following morning the cheese are taken out of the hoops, the cloth removed and the cheese put back in the hoops again without any cloth, and pressed during the forenoon. They are then taken out and paraffined before being placed in the curing room. If the pressing and paraffining are done carefully, the cheese will have a very neat, smooth appearance.

These cheese are made from the regular factory curds handled in the ordinary way up to time of salting. At that stage, a sufficient amount of curd for the small cheese is taken out and salted from $1/4$ to $1/3$ of an ounce per pound of curd. The pressing can be done very con-

veniently in an ordinary gang press by placing a board platform on top of the regular trough and laying the hoops on their sides, four wide. A wide plank, placed against the screw-head and the ends of the hoops, presses them the same as large cheese. It takes one man's time to make and paraffin one hundred one-pound cheese each day. Another very popular size is a five-pound cheese 6 inches in diameter and 4 inches high. This year by supplying the farmers with five-pound cheese instead of cutting large cheese, the consumption was almost double that of any previous year. A stock of well cured ten-pound cheese is always kept on hand at the factory and people come from long distances to purchase, especially for their winter supply. This size has, of course, been on the market for years.

The past season's business would indicate that a one-pound Canadian cheese is popular with both grocers and consumers. These cheese were sold for 19 cents each at shipping point, and retailed at 25 cents each.

THE ENTOMOLOGICAL BRANCH

NEW ENTOMOLOGICAL LABORATORIES

BY DR. C. GORDON HEWITT, DOMINION ENTOMOLOGIST

THE pressing need for increased accommodation for the entomological work that is being carried on in various provinces by the Field Officers of the Branch, and a demand on the part of farmers and fruit-growers for further assistance in controlling insect pests have been responsible for a decision on the part of the Minister of Agriculture, Hon. Martin Burrell, to have entomological laboratories erected where they were most necessary. Accordingly four new laboratories have been built during

the past summer at the following places: Annapolis Royal, N.S.; Fredericton, N.B.; Treesbank, Man; and Lethbridge, Alta.

ENTOMOLOGICAL LABORATORY, ANNAPOLIS ROYAL, N.S.

Since 1912 a small laboratory at Bridgetown, N.S., has served as headquarters for the Entomological work of the Branch in Nova Scotia. The increase of the work and of the staff employed necessitated increased accommodation. Annapolis Royal was selected as the place

for the new laboratory on account of its situation in reference to the area of the Brown-tail Moth infestation, convenient railroad facilities and the presence of a promising fruit-growing district in which the orchards were not at present properly cared for. The laboratory is erected on an excellent site on the county school grounds which the school board of Annapolis Royal has kindly provided.



ENTOMOLOGICAL LABORATORY,
ANNAPOLIS ROYAL, N.S.

The building measures twenty-six feet square and consists of basement, ground floor and attic. In the roomy basement accommodation is provided for field and spraying equipment; it also contains a dark-room and lavatory. The ground floor is divided into three rooms, namely, an office for the Field Officer in charge, a large laboratory and a general work room. The commodious attic is specially well-lighted to serve as a photographic room and work room. Steam-heating is installed.

From this laboratory the campaign in Nova Scotia against the Brown-tail Moth is directed. In addition investigations are being carried out by Mr. G. E. Sanders, Field Officer in charge, on the more important insects affecting fruit*

*To prevent duplication of work and to secure the best cooperation, the Dominion Field Officer confines his attention to the biting insects and the Provincial Entomologist, Prof. Brittain, studies the sucking insects (aphides and bugs).

such as the bud-moth and fruit-worms of apples. Experimental work in spraying and the investigation of insecticides have already rendered very valuable assistance to the fruit-growers of the province. The former entomological laboratory at Bridgetown will be used as a sub-station wherever it may be most needed.

ENTOMOLOGICAL LABORATORY AT FREDERICTON, N.B.

In 1912 a small laboratory was established at Fredericton, N.B., in connection with the Brown-tail Moth and other work in New Brunswick. The University of New Brunswick provided a site on the university campus. The increase in the infested area, and the large amount of work consequent upon our efforts to establish the parasites of the Gipsy and Brown-tail moths imported from the New England States and the carrying on of an intensive study of the natural control of certain native insects such as the Tent Caterpillars, the Spruce Budworm and Fall Webworm, rendered an increase in the laboratory accommodation immediately necessary. The University had kindly permitted us to use one of their large laboratories during the summer.

The building is of solid brick construction and measures twenty-four feet by thirty feet. It consists of basement, ground floor, first floor and attic. The basement contains the water supply for the building, comprising a well, tank, and electrically driven pump, and provides storage room for field equipment and supplies. The ground floor contains, at the front, offices for the two officers in charge of the work; Mr. J. D. Tothill has charge of the colonisation and study of the parasitic insects and Mr. L. S. McLaine has charge of the field work against the Brown-tail Moth in New Brunswick

and the collection of parasites in the New England States; at the back of the ground floor is a work room. On the first floor a large laboratory occupies the front half of the building and a specially

owing to a lapse of some time before the infestation was discovered in 1907 and eradicated measures were begun.

The small laboratory previously used will be used as a sub-station in another part of the province.



ENTOMOLOGICAL LABORATORY, FREDERICTON, N.B.

lighted room is provided behind for photographic and other work; a dark room and bath room are also provided on this floor. The high pitched roof furnishes a roomy attic for storage purposes. Steam-heating and electric light have been installed. The building is well situated on the University campus on a site which the University authorities have generously provided.

The work that is carried on at this laboratory comprises some of the most important investigations that the Branch is prosecuting on the natural control of insect pests. The thoroughness with which the Brown-tail Moth campaign is carried on is evidenced by the fact that by taking the necessary measures from the time of the discovery of the first infestation, it has been possible in New Brunswick to prevent this insect from becoming established in the province; whereas it became established in Nova Scotia

ENTOMOLOGICAL LABORATORY, TREESBANK, MAN.

Mr. Norman Criddle was appointed in 1913 to carry on investigations on White grubs (*Lachnosterna*) and cereal pests in Manitoba and adjoining territory. As the temporary quarters he occupied did not afford adequate accommodation for his work, a small wooden laboratory measuring twelve feet by sixteen feet has been erected during the

past summer on a site kindly provided by Mr. Percy Criddle on his farm, where excellent facilities occur for field and experimental work.

ENTOMOLOGICAL LABORATORY, LETHBRIDGE, ALTA.

Investigations on insect and other pests in Southern Alberta were commenced in 1913, by Mr. E. H. Strickland, Field Officer for Alberta



ENTOMOLOGICAL LABORATORY, LETHBRIDGE, ALBERTA

who was provided with temporary laboratory accommodation at the Dominion Experimental Farm at Lethbridge, Alta. During the past summer a permanent laboratory was built on the Experimental Farm.

The building measures twenty-three feet by twenty feet and con-

tains four rooms, namely; office, laboratory, spare room and dark room. By arrangement the Director of the Experimental Farms and the Superintendent of the station have kindly furnished for experimental purposes a small plot of ground adjoining the laboratory.

THE SEED BRANCH

THE YEAR'S WORK IN SEED TESTING

WITH the exception of seed testing, the principal phases of the Seed Branch work conducted during the past year have been outlined in previous issues of THE AGRICULTURAL GAZETTE. In addition to the work summarized below, a large number of tests have been made in connection with investigations. Among the more important of these is one regarding the germination of paper packet seeds and the amount of seed of the various varieties supplied by the different firms. The outstanding features of this investigation will be dealt with in a subsequent issue of THE GAZETTE, as will also the seed testing work done at the Calgary laboratory during the past season.

SAMPLES RECEIVED FOR TEST

The number of samples received from seed merchants and farmers and tested for purity and germination at the Ottawa seed laboratory was larger during the laboratory year ending August 31, 1915, than in any previous season. Compared with the year before, the principal increase was with samples of grain for germination test. The growing interest in testing seed corn for germination is indicated by an increase to 399 samples received for test compared with 129 the previous season. About 85 per cent of the samples received were tim-

othy, red clover, alsike and alfalfa seed to be graded under the Seed Control Act standards. In the following table is shown the number of samples of different kinds of seed tested at the Ottawa seed laboratory during the year ending August 31, 1915.

<i>Kinds.</i>	
Wheat	504
Oats	1437
Barley	195
Corn	399
Rye	6
Other Cereals	45
Flax	28
Millet	63
Rape	8
Vetches	5
Timothy	2755
Alsike	1939
Red Clover	2990
Alfalfa	484
White Clover	49
Other Clovers	74
Blue Grass	33
Western Rye Grass	7
Awnless Brome Grass	6
Redtop	6
Orchard Grass	7
Other Grass & Clovers	19
Mixture Grasses	146
Roots and Vegetables	270
Herbs	3
Tobacco	11
Flowers	10
Miscellaneous	18
Total	11,517

SOURCES OF SAMPLES AND GRADES

A large proportion of the grain samples are sent by farmers, but nearly 75 per cent of the timothy

and clover comes from seed merchants. Many of the samples represent lots that are in process of cleaning for market and are tested again after being re-cleaned. On account of this, the number of samples coming within the various grades is not an accurate indication of the average quality of the seed as put on the market. The following table shows the number of samples of the kinds of seeds for

which grades are defined which were received during the past season with the numbers from seed merchants and farmers and the numbers coming within the different grades. The numbers given under the column for "Other Reports" include the samples which were tested for percentage purity, or were reported in some way other than by the regular grade certificate forms.

KINDS	Total	Merchants	Farmers	GRADES					Other Reports
				Extra No. 1	No. 1	No. 2	No. 3	Re-jected	
Timothy	2755	2110	645	13	514	1213	534	446	35
Alsike	1939	1533	406	1	239	551	632	480	36
Red Clover	2990	2150	840	31	705	1034	689	440	91
Alfalfa	484	287	197	4	195	154	87	15	29
Clover mixture.	146	83	63				78	67	1

GERMINATION OF CEREALS

Many of the grain samples received are tested for both purity and germination but most of the tests were for germination only. The number of samples submitted for test by farmers depends largely on the extent of injury which the cereal crops receive from frost or other causes before or during harvest. In the following table is shown

the number of samples of wheat, oats and barley received for germination test from the different provinces and from the Canadian Seed Growers' Association, and a summary of the results of the test. The standard percentage germination for cereals is 95 per cent. Grain germinating below two-thirds of standard is prohibited from sale for seed unless the percentage germination is indicated.

	No. of samples tested	Up to and above Standard	Below Standard and above 2/3	No. below 2/3 of Standard	Average per cent Germination
WHEAT:					
Total	496	421	64	11	94.901
Canadian Seed Growers' Association	134	118	16	0	97.36
Saskatchewan	239	201	33	5	94.75
Quebec	55	50	4	1	96.84
Ontario	24	21	2	1	93.87
Manitoba	20	15	5	0	94.75
Alberta	16	11	3	2	86.38
New Brunswick	4	3	0	1	81.
Prince Edward Island	3	2	0	1	66.
Nova Scotia	1	0	1	0	71.

OATS:					
Total.....	1421	634	643	144	69 51
Canadian Seed Growers Association	177	142	35	0	96.44
Saskatchewan	920	283	501	136	56 2
Quebec	120	68	51	1	92.3
Ontario	92	75	16	1	95.9
Manitoba	68	43	22	3	92.5
Alberta	33	15	15	3	84
Prince Edward Island. .	8	6	2	0	93.5
New Brunswick	2	1	1	0	81.
Nova Scotia	1	1	0	0	96.
BARLEY:					
Total	190	104	67	19	87 92
Canadian Seed Growers Association	32	30	2	0	98.12
Saskatchewan	95	34	46	15	82.65
Manitoba	21	15	3	3	88.76
Quebec	19	14	4	1	90.53
Alberta	12	3	9	0	88.66
Ontario	11	8	3	0	96.73

THE CONTAGIOUS DISEASES ACT AMENDED

The Order under "The Animal Contagious Diseases Act," of date the 9th day of September, 1915, as amended by Order of date the 28th day of October, 1915, is hereby further amended by adding thereto the following paragraph:—

"(34) Pure bred poultry for breeding or exhibition is permitted to enter Canada when accompanied by the affidavit of the owner that it has come from an establishment not included in a closed area under federal quarantine.

"Canadian exhibitors will be permitted to return their poultry to Canada after exhibiting at United States shows, provided the show is not held in a closed area under federal quarantine."

Dated at Ottawa this ninth day of November, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

The Order under "The Animal Contagious Diseases Act," of date the 9th day of September, 1915, as amended by Orders of date the 28th of October and 9th of November, 1915, is hereby further amended by substituting for paragraph (27) the following:—

"Hay may be admitted from the states of Michigan and Vermont provided each shipment is accompanied by the affidavit of the owner or shipper that the said hay is the product of either of the states aforesaid, and has not been exposed to the infection of foot and mouth disease."

Dated at Ottawa this 15th day of November, 1915.

(Sgd.) GEO. F. O'HALLORAN,
Deputy Minister of Agriculture.

PART II

Provincial Departments of Agriculture

EDUCATIONAL EXHIBITS AT FAIRS

NEW BRUNSWICK

EXHIBIT OF THE FRUIT DIVISION, NEW BRUNSWICK DEPARTMENT OF AGRICULTURE, AT THE FREDERICTON EXHIBITION, SEPTEMBER 20th-25th, 1915

BY A. G. TURNEY, B.S.A., PROVINCIAL HORTICULTURIST

THE display of the Department of Agriculture consisted of a striking patriotic design erected in a booth about 24 feet long and 10 feet wide. The design was worked out in apples and consisted of a large Union Jack 9 ft. x 5 ft., surrounded by 10 maple leaves, one for each province of Canada and one for the Yukon Territory. The back ground was covered with dark green cloth, which contrasted effectively with the brilliant colours of the flag, which was in itself almost a perfect representation both as to colour and shape. The blue and white had to be obtained, of course, by wrapping the apples in paper. The maple leaves were in various colours, the following varieties being used in their make-up: Golden Russet, semi-matured Wealthy, Crimson Beauty, Switzer and Hallett's White (a local apple). The sign: "Canada will never let the old flag fall" was worked in Montreal Beauty crabs. The centre design was flanked on each side with a pyramidal display of apples in half boxes and baskets, and in cones, and was also trimmed with dark green.

This exhibit was easily the most attractive feature of the entire exhibition, and received more favourable comments than any other booth.

THE HONEY EXHIBIT

By cooperating with the members of the New Brunswick Beekeepers' Association, the Provincial Apiculturist, Mr. H. B. Durost, succeeded in getting together what, by many, was said to be the best exhibit of honey ever seen in Eastern Canada.

The Department of Agriculture, through Mr. Durost, supplied 12-section cases for all the comb honey, and lithographed (2½ and 5lb) pails, and other containers, for the extracted honey. In this way uniformity of package and quality of goods was secured. Upwards of three-fourths of a ton of honey was thus brought together and displayed to the best advantage. At the close of the exhibition, practically all of this honey was sold. Some went as far as Ottawa, and some to Halifax, but the most of it went to various parts of the province. Members of the association who supplied the honey have since told the writer that the demand for honey has, even already, so much increased that they are unable to fill the orders that are coming in.

In addition to this exhibit, the Division also displayed about 80 Riker mounts of various injurious

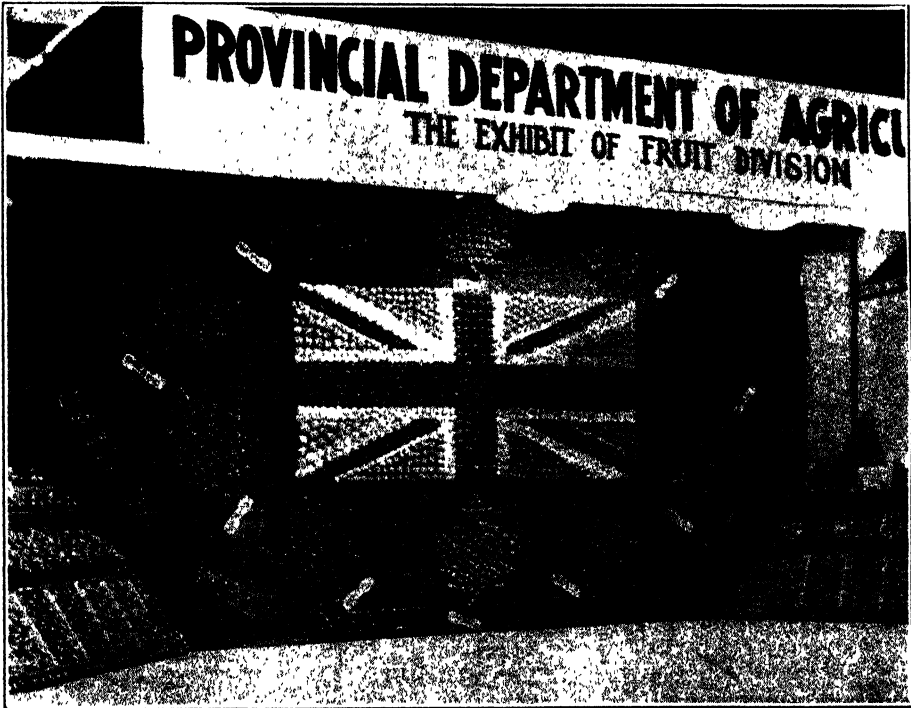
insects and fungi affecting horticultural and farm crops.

**NEW BRUNSWICK APPLES EXHIBITED
IN MONTREAL—1912**

There being plenty of apples still in cold storage on December 15th, 1912, it was decided to make a display of New Brunswick apples in Montreal. Accordingly the Department rented the store at No. 757 St.

actual purchase of fruit lands here. (2) The splendid fruit exhibited brought to the observer the realization of a good soil and climate and hence a new and better impression of our province. (3) Good general advertising for New Brunswick and particularly of its fruit growing possibilities.

Notwithstanding much wet and disagreeable weather the exhibit attracted considerable attention and



**STRIKING DISPLAY OF THE NEW BRUNSWICK DEPARTMENT OF AGRICULTURE AT
FREDERICTON, 1915**

Catherines St. West and arranged an attractive window display of twenty-five boxes of McIntosh Red, Fameuse and Bishop Pippin. In the store proper there were a dozen or more boxes of King of Tompkins and Merit, and on the counters were several display cones and plates of Fameuse and McIntosh Red. This exhibit which opened on December 28th and closed on January 18th accomplished three things:—(1) The

there were 703 callers. Of these, more than one-third were apparently in good financial circumstances and were interested in the possibilities of New Brunswick as a 'new field.' One of the newspapers mentioned particularly that our exhibit was to give information about the province for New Brunswick and was not a real estate advertising scheme. This, I believe, aided quite a lot in making our exhibit successful. Many of the

people who entered the store simply asked a number of questions and took samples of the literature we had. Many others, however who wanted further information, copies of the new horticultural report, or other literature, left their addresses. These are now on file here. Mr R. P. Gorham, Assistant Horticulturist,

was in charge of the exhibit and was assisted by Messrs. J. H. Ross and K. Emberly of Macdonald College. Literature descriptive of the fruit-growing possibilities of the province was distributed and full information given on orchard planting and management.

QUEBEC

BY H. NAGANT, EDITOR LE JOURNAL D'AGRICULTURE

THE following description of the chief exhibits of the Provincial Department of Agriculture at the exhibition held in Quebec, will show the practical character of the work undertaken.

THE POULTRY EXHIBIT OF THE EXPERIMENTAL UNION

Under the direction of Rev. Br. M. Liguori of La Trappe d'Oka, the Quebec Farmers' Experimental Union arranged a complete poultry plant, including a series of model and inexpensive buildings, with runs attached and plots of the various foddors recommended for fowls. Mr. Dumaine, Poultry Instructor for the Department of Agriculture, was in charge of the plants.

In the first building marked "Artificial Incubation" were four or five incubators filled with strong and healthy chicks. The following poster was displayed: "Breed chicks early and you will have eggs in winter when they are scarce and expensive." The department of incubation was in charge of Mr Morgan, Poultry Instructor.

Nearby were the artificial breeding colonies, demonstrating how easy it is to breed chicks successfully as early as April, thereby greatly increasing the profits. There were three different types of brooders, one, which could accommodate seven hundred chicks, was heated with coal; this system saves fuel and labour.

In the runs attached to the colony-



DISPLAY OF THE POULTRY DIVISION OF THE QUEBEC DEPARTMENT OF AGRICULTURE

houses were various crops used in feeding fowls. For the information of the public, in each of these plots the name of the plant, its qualities and requirements, were indicated on a sign-board.

The types of poultry houses were also open to visitors; one, 12 x 15 feet, for 30 hens was fitted with two glazed sashes in the front and with an improved ventilator; the other 15 x 15 feet, for 40 hens, had a cotton front with a southern exposure. Directions for the proper management of these buildings and the feeding of poultry kept in them, as well as crate-fattening directions were prominently displayed.

Each day, demonstrations in killing and caponizing poultry were given by the instructors of the Department of Agriculture, Messrs. J. Charbonneau, Morgan, A. Chabot and R. Dumaine. Explanations were given in French and in English on the simplest, cleanest and quickest way to kill fowl.

BEEKEEPING BUILDING

The beekeeping exhibit consisted of an observation hive with strong bees; two hives, with frames fitted with sections and their supers, ready to receive the bees; comb honey and extracted honey, centrifugal extractors; three different feeders; two swarm catchers; male traps, smokers, honey cans showing various ways to prepare honey for the market and all things necessary to teach the most improved methods. Useful advice and information were displayed on posters. Numerous pamphlets, including the laws on the protection of bees, were distributed to the public. In the industrial building was a fine exhibit of clover honey, wax and equipment; all the exhibitors were members of the Quebec Beekeepers' Association.

HORTICULTURAL BUILDING

The great hall of horticulture, which forms an annex to the palace of industries, presented an impress-

ive appearance. In this hall, tastefully decorated, the Quebec Department of Agriculture had made an exhibit of the finest products of the orchards and gardens of the province.

Demonstration Garden.—At the entrance, could be seen the interesting demonstration garden established in the centre of the hall by Mr. Solyme Roy, Chief Horticulturist of the Department of Agriculture. In spite of the smallness of the space available a number of varieties of trees, plants, flowers, vegetables and fruits had been arranged in attractive order.

Three groups in pyramidal shape were at the rear of the garden. The first group was composed of fruit trees, surrounded at the base with the best varieties of vegetables, fodder and garden plants. Another group was composed of forest and ornamental trees.

In the centre a great pyramid, decorated with rich collections of annual and perennial flowers, served as a base to the bronze statue of Honoré Mercier, the founder of the Order of Agricultural Merit. On the soil of the garden and in the moss, a number of pretty ornamental plants had been placed, among which could be seen chrysanthemums, asters with large flowers, kochias, dahlias, gladiolas with bright colours, etc.

Agriculture in the Schools.—At the left of the entrance, the work of agricultural teaching in the schools and school gardens was well shown by means of tables, photographs, signs and pamphlets concerning this new but very important branch of agricultural teaching in this province. The credit for this exhibit is due to Mr. Jean Charles Magnan, District Representative for Champlain-Portneuf; the rapid development of the school garden movement is largely due to his untiring efforts. This year four hundred school boards have spent a part of their grant towards the establishment of school gardens and for the purchase of implements, books of agriculture, prizes, etc.

The 12,000 children gardeners of the province have increased the cultivated area in the province by more than 600,000 square feet.

FRUIT IN THE PROVINCE OF QUEBEC

This department had been organized by the fruit growing division of the provincial Department of Agriculture, under Messrs. S. Roy and J. H. Lavoie. The fruit came from the orchards of La Trappe, from the

ing one, was also shown at the Sherbrooke Exhibition.

BACON AND CURED MEATS

In the centre of the fruit exhibit, Mr. Alfred C. St. Pierre, manager of the demonstration packing house, established at St. Valier by the Provincial Government, had built a very attractive pyramid of bacon and cured meats, prepared with the greatest care and after the best methods

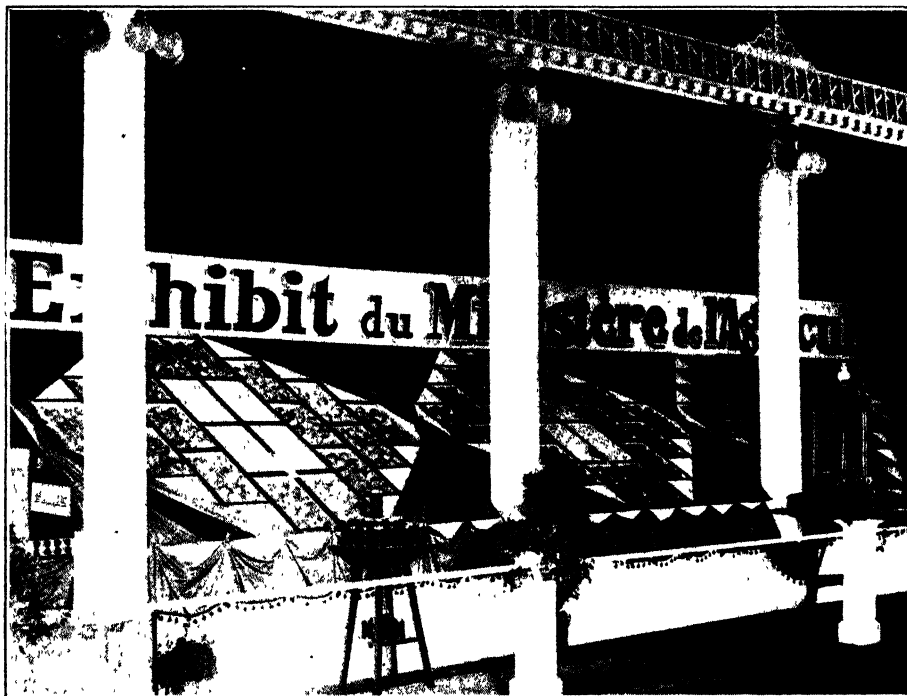


EXHIBIT OF THE QUEBEC DEPARTMENT OF AGRICULTURE AT PROVINCIAL EXHIBITION

demonstration orchards, and several horticultural societies.

At the end of the great fruit exhibit was the hall of demonstration and teaching, in charge of Rev. Fr. Leopold, of Oka, who had gathered a splendid collection of some 54 varieties of apples, grown in the orchard of La Trappe, instructive charts, insecticides and fungicides, fruit growing implements, trees and scions used in fruit growing demonstrations. This exhibit, as well as the preced-

taught by the Danish expert, Prof. Hansen. The exhibit was composed of 120 pieces: Windsor bacon boned and skinned, Windsor bacon special choice, boned breakfast bacon, hams, cottage rolls, fresh pork sausages, Geneva blood pudding, etc.

THE DOMESTIC SCIENCE SCHOOLS

The Rev. O. Martin, Inspector of Domestic Science Schools, was in charge of the exhibit made by 26 domestic science schools of the province

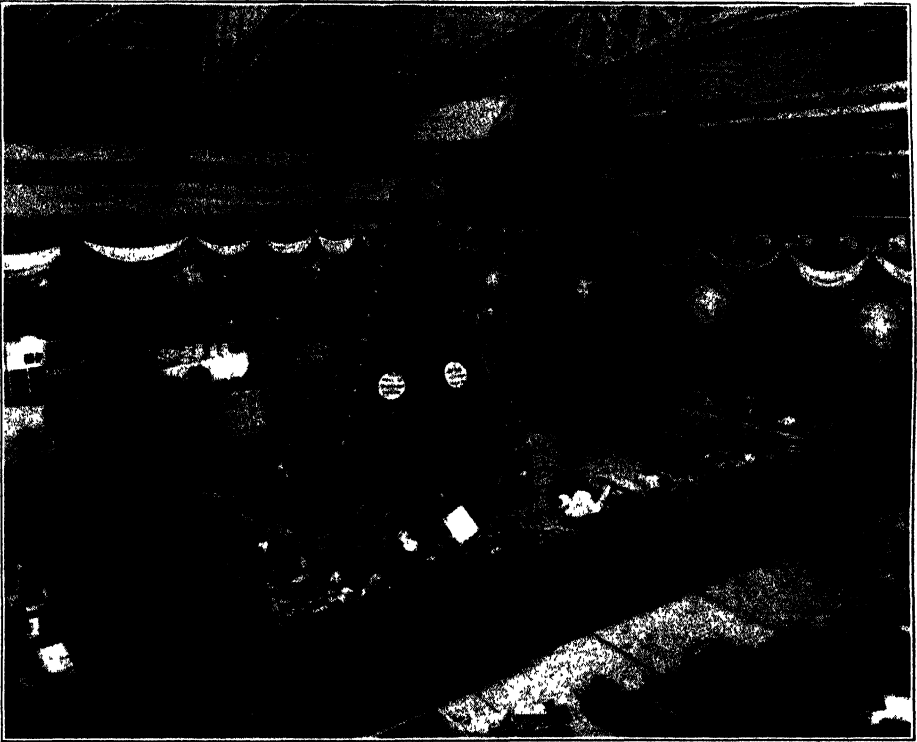
MANITOBA

MAKING THE MOST OF AN EXHIBITION

THE Manitoba Department of Agriculture has found that to achieve maximum results from an exhibit of agricultural products it is necessary to have movement—either demonstration work of some kind, or mechanical movement. Where crowds are strolling through the corridors of an exposition

is definitely arrested, it is easier to interest the people in the products displayed, to answer their questions and distribute literature.

In connection with the distribution of literature at exhibits, the Department has come to the conclusion that the best course to follow is to provide small booklets and folders to hand



PART OF MANITOBA EXHIBIT OF VEGETABLES AT CANADA LAND AND APPLE SHOW
HELD AT WINNIPEG, 1913

building, crowded with things to see, they seldom fail to stop to watch the movement of some novel contrivance. Thus, a model of a grain elevator at the head of the lakes, loading a grain boat, was used by Manitoba one year at the Toronto Exposition with excellent effect. Once their attention

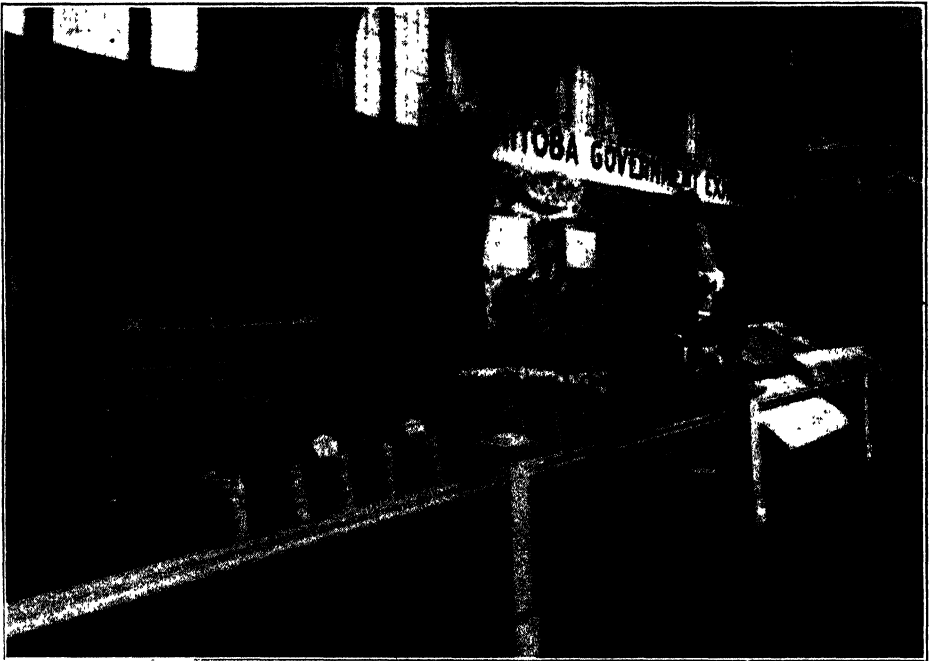
out to everyone, at the same time taking the names and addresses of all those who are interested in receiving the more elaborate illustrated literature, which is too expensive to throw around at random. By following this course it is possible to interest a large number of people

and provide the special information that is most valuable to the individual.

With the exception of a booth at the annual Christian Endeavor Convention at Chicago, Manitoba has not done much exhibiting this year; but in the past the province's displays have ranked among the finest, being awarded many gold medals at the Canadian National Exhibition, Toronto, and elsewhere.

the Home Economics societies of Manitoba and was comprised of such exhibits as embroidery, sewing, cooking and cured meats. Section two contained grain, threshed and in the straw; vegetables and fruits.

The section of it which was devoted to fruit took first prize in the special award for fruit grown in a prairie province. The exhibit of vegetables was also the most complete on the grounds, and several of the in-



MANITOBA DEPARTMENT OF AGRICULTURE EXHIBIT AT A RECENT TORONTO EXPOSITION

AT THE DRY FARMING CONGRESS

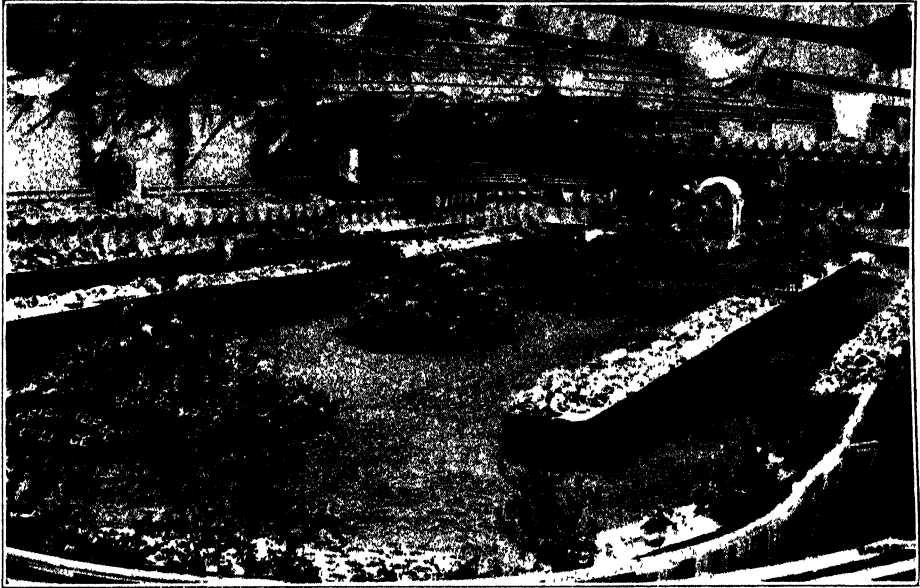
Particular mention may be made of the Manitoba exhibit at the Dry Farming Congress which was held at Lethbridge, Alberta, in 1912, from Oct. 19th to 26th, for, while the province's display on that occasion was assembled within three weeks, section one of it was awarded the first prize in the face of keen international competition.

The exhibit was divided into two sections. Section one represented

individual exhibits from Manitoba took prizes as individual exhibits. The large Manitoba exhibit occupied one whole section of the main building, and there is no question that the several thousand delegates from all over the world carried away impressions which represented the highest form of publicity and educational propaganda. The Home Economics section with its pickles, preserves, honey, fancy work, clothing, etc., etc., reflected great credit upon the

women of the Canadian West, the whole space of 2,500 feet which the display occupied affording striking evidence of quality and good taste in home-making. The fruit section with its twenty-two different kinds

of apples and crabs was likewise a feature which was much talked about by delegates with preconceived ideas about the adaptability of our soil and climate.



AN EDUCATIONAL EXHIBIT OF THE MANITOBA AGRICULTURAL COLLEGE

SASKATCHEWAN

BY F. H. AULD, ACTING DEPUTY MINISTER OF AGRICULTURE

WHILE the exhibits of the Saskatchewan Department of Agriculture have for the most part been displayed at exhibitions outside of Saskatchewan there has been a growing tendency to exhibit for the benefit of Saskatchewan citizens the resources of the province and the best means of making them available. The exhibits at extra-provincial fairs have for their object the attraction of settlers, while those at provincial exhibitions are designed to aid farmers in increasing production and in promoting home-making.

In 1906 the department arranged for the holding of "demonstrations"

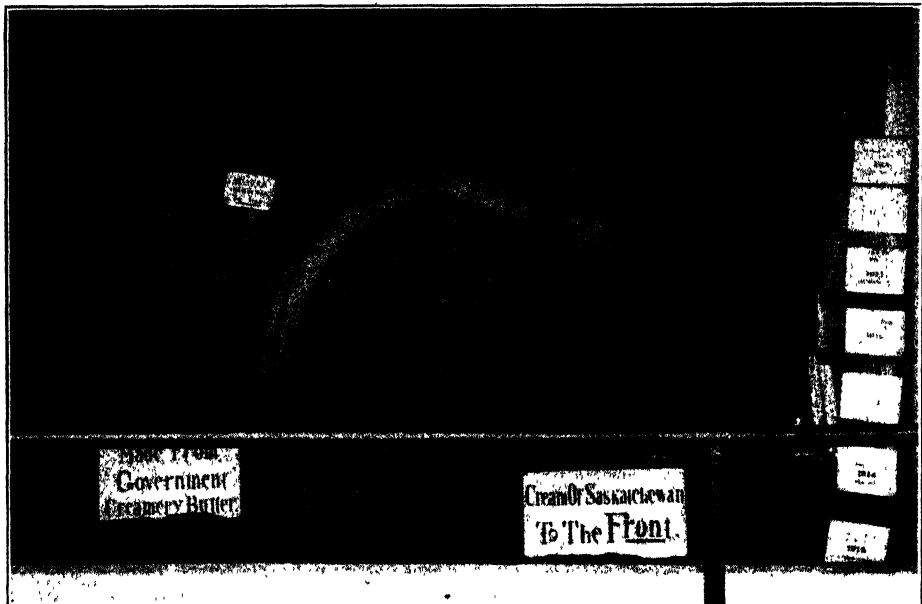
by a teacher of household science at several of the rural fairs. These were carried on in a tent when the equipment of the agricultural society did not provide better facilities. From this beginning the work developed and the exhibits of the Department of Agriculture at the larger fairs now include many features which provide points of contact between the Department and the people.

AT THIS YEAR'S EXHIBITION

At the Provincial Exhibition held in Regina, July 26th to 31st, inclusive, the display of the Department of Agriculture included models showing how a quarter-section and a half-

section of farm land could be laid out, including the location of barns and other farm buildings, the house, garden and lawn, as well as the size and arrangements of fields. Models for barns, portable poultry houses, sheep feeding crates, and piggeries were a source of interest to those who visited the exhibition. Fifty Riker mounts containing samples of noxious and other weeds of the province were displayed and were of

fair a machine gun slightly less than the natural size was produced in butter. A "butter man" was also made, the details of military clothing being worked out in butter. To show how the dairy industry in Saskatchewan is growing, cubes of butter were made which represented the output of butter each year for the past eight years. A chart on the wall drawn to scale also showed in a comprehensive way each year's out-



A MACHINE GUN IN BUTTER
Exhibit of the Dairy Branch staff of the Saskatchewan Department of Agriculture

special value and interest to the members of the Farm Boys' Camp as well as many of the visitors. An automatic machine displaying for one minute each 100 coloured sketches of the birds of Saskatchewan never failed to attract an audience. Bulletins dealing with agricultural topics were placed at the disposal of anyone desirous of obtaining literature on new and advanced practical methods of crop growing, live stock raising, dairying, cooperation, etc.

In the Dairy Exhibit at the Regina

put. A banner giving the names and location of the fifteen creameries operated by the Dairy Branch, and a table with bulletins and literature relative to dairy matters, completed the exhibit.

EXHIBIT AT DENVER, COLORADO

The Department of Agriculture this year sent an exhibit to Denver, Colorado, and those who attended the International Soil Products' Exposition and Dry Farming Congress at that place with the hope of seeing and hearing something of Saskatche-

wan were by no means disappointed. The Department exhibit occupied a space of 60 feet x 30 feet and included exhibits from Swift Current, Rosthern, Maple Creek and individual displays. The display consisted of wheat, oats, barley, flax, rye, peas, clovers, alfalfa and varieties of grasses. Although many varieties were on exhibition only the leading commercial varieties were given special prominence, being of greatest interest to the public.

entries, thus demonstrating very forcibly to the people of Colorado and other states the possibility of raising alfalfa in the Canadian West. A point of importance lies in the fact that all grain displayed at this Congress was grown under semi-arid conditions.

**PRIZES AWARDED TO EXHIBITORS
FROM THE PROVINCE OF
SASKATCHEWAN**

PROVINCIAL GOVERNMENT EXHIBIT:

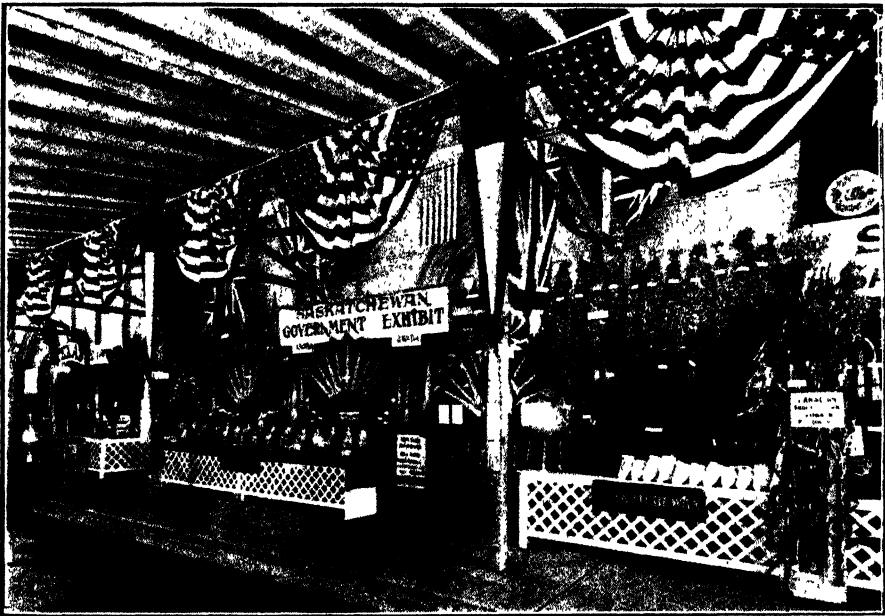


EXHIBIT OF THE SASKATCHEWAN DEPARTMENT OF AGRICULTURE AT THE INTERNATIONAL SOIL PRODUCTS' EXPOSITION AND DRY FARMING CONGRESS
DENVER, COLORADO

The fact that Marquis wheat exhibited by Seager Wheeler won the sweepstakes lends a good deal of interest to the provincial exhibit, as this variety is almost limited to Western Canada, and, since winning the \$1,000 in gold at the New York Land Show some years ago, has won in practically every important competition in which it has been entered.

The display of alfalfa from Saskatchewan was of the finest quality, taking first place in a class of twenty

Class 1, premium 2—Bu. Hard Red Spring Wheat:

First and Sweepstakes won by Seager Wheeler, Rosthern, Sask.

Second prize—J. S. Field, Regina, Sask.

Class 2, premium 7—Bu. White Oats:

Second prize won by R. H. Carter, Fort Qu'Appelle, Sask.

Class 16, premium 83—Sheaf Hard Red Winter Wheat:

First prize won by Seager Wheeler, Rosthern, Sask.

Class 16, premium 84—Sheaf Hard Red Spring:

First prize won by Seager Wheeler, Rosthern, Sask.

Class 16, premium 86—Sheaf Soft Spring Wheat:

First and third prizes and Sweepstakes won by Seager Wheeler, Rosthern, Sask.

Class 16, premium 88—Sheaf White Oats: First prize and Sweepstakes won by Seager Wheeler, Rosthern, Sask.

Class 18, premium 109—Two sheaves Alfalfa, showing two cuttings:

First prize won by W. R. Abbot,

Maple Creek, Sask.

Class 18, premium 110—Sheaf Brome Grass: First prize and Sweepstakes won by Seager Wheeler, Rosthern, Sask.

Class 18, premium 110—Sheaf Brome Grass: Third prize won by R. H. Carter, Fort Qu'Appelle, Sask.

Class 18, premium 113—Sheaf Sudan Grass: Third prize won by Seager Wheeler, Rosthern, Sask.

Class 18, premium 115A—Sheaf Timothy: Third prize won by W. R. Abbot, Maple Creek, Sask.

BRITISH COLUMBIA

EXHIBIT OF POULTRY DIVISION

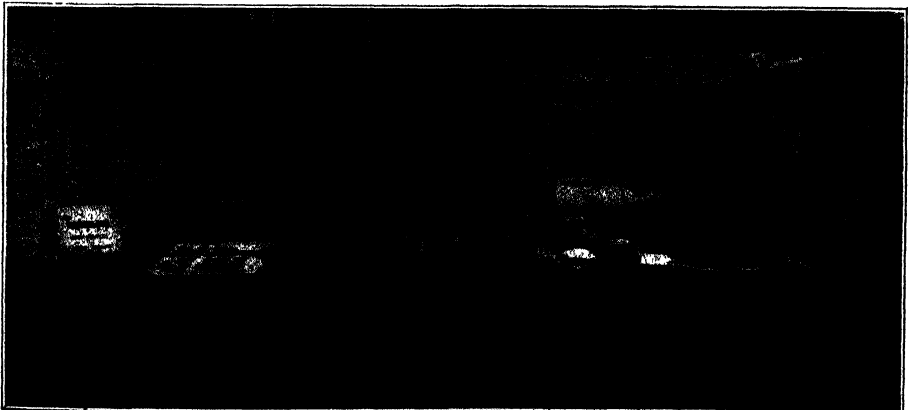
BY H. E. UPTON, PROVINCIAL POULTRY INSTRUCTOR

IT has been the policy of the Poultry Division to gather together an educational exhibit made up of models built on a small knock-down scale for exhibition at the larger fall fairs and poultry shows throughout the province.

This exhibit is staged on a table approximately 9 feet wide and 18 feet long. To be shown at its best, a space 20 feet x 30 feet is required, so that persons interested may walk around both the back and front of the exhibit. The table is divided into three sections, the middle section being 8 inches higher than the other two sections. The table stands

2 feet 8 inches from the floor and is in a knock-down form. We prefer to use green burlap on the table which sets the exhibit off at its best, but have had to be satisfied with white cheese-cloth in most places.

The interest shown by persons visiting different fall fairs and poultry exhibitions is very keen, and we have discussed the different phases of poultry raising with as many as 92 persons in one day. The exhibit is accompanied by the provincial poultry instructor, who attends to the packing, shipping and staging of the exhibit.



POULTRY EXHIBIT OF THE BRITISH COLUMBIA DEPARTMENT OF AGRICULTURE

MODELS

The models are constructed of quarter-inch material, usually spruce and in a knock-down form. These models are not all made true to scale, but we try to hold to the scale of one inch being equal to 18 inches. We find that pin hinges have given us very good success, for a common ten penny nail will fit in the hole for the pin. After the models are made, they are stained with a common walnut stain. The different models consist of houses as follows:

Sections of the continuous laying house on the Woods, combination pitch and shed-roof plans; then for colony and rearing houses, models are constructed on shed-roof, Tolman and Woods plan also. Models of trap-nests represent both single and double compartment nests. These are built to represent the Connecticut single compartment nest and the Morgan and Maine State double compartment nest. Models are shown of the fresh air brooder, of fattening crates and small rearing coops. A model is also shown of the latest type of incubator house with double walls above the ground and cement or brick being laid below the ground with the dead air space between the two walls.

CHARTS

Charts are hung about the exhibit, describing the different feeding rations advised by the Department of

Agriculture for use in feeding from the time the chick is hatched to, and including, the moulting period at the end of the first year. Other charts outline descriptions of lice killers and powders, the importance of cooperation, the need for producing good-sized fresh eggs, the necessity of joining the provincial association, etc. Bulletins that are issued by the Department of Agriculture relating to the feed, housing and general management of poultry, ducks and geese are given free to persons requiring them, but care is always taken that the many children visiting the different buildings will not pick up the bulletins and cause unnecessary waste.

DEMONSTRATIONS

Demonstrations are often-times held in connection with the exhibit on different phases of the exhibition. During the past three years, demonstrations have been given in killing and plucking fowls for market, candling of eggs and prevention and treatment of minor diseases of fowls. Attendance at these demonstrations has always been good, but great difficulty is usually experienced by the speaker in giving a demonstration where talking is necessary in a poultry building where the species of *Gallus* are making themselves known. For this reason, a separate room should always be used for practical demonstration purposes.

PROVINCIAL EXHIBIT AT PRINCE RUPERT FALL FAIR

AN exhibit of produce from the various coastal and interior experimental plots of Northern and Central British Columbia was made under the auspices of the Provincial Department of Agriculture at the fair of the District Agricultural and Industrial Association held at Prince Rupert, September 22, 23 and 24.

From the Bulkley and Nechaco

valleys, which have an altitude of from 985 to 1930 feet, and are situated between latitudes 54 and 56 degrees and 200 to 500 miles from the coast, there were shown various varieties of grain, both in sheaves and threshed, including Marquis and Prelude wheat, Gold Rain, Banner and Abundance oats, barley and rye. From the Kitsumkalem and Lakelse plots at an altitude of 241 feet, lati-

tude 54.5 degrees and 95 miles from the coast, came potatoes of a splendid marketable type, the varieties including Table Talk, Faithly, Gold Coin, Green Mountain, Early Reliance, Burbank and Early Rose. Corn was represented by the following varieties:—Early Malcolm, Golden Nugget, Malakoff, Golden Bantam, Red Squaw, Quebec No. 28 and Michigan Flint. Well ripened tomatoes and specimens of melons, squash, cucumbers and citron were in the collection, along with a variety of other vegetables and field roots.

The Bella Coola plot, latitude 52.5 degrees and 70 miles from the coast, sent field roots and vegetables, similar varieties of corn, melons, etc., all of which mature earlier than on the more northerly plots.

The Queen Charlotte islands, latitude 53.54 degrees, were represented by field roots and vegetables.

The object was to demonstrate the class and variety of produce that can be raised in Northern and Central British Columbia; also to educate the farmers and settlers in a pioneer country on selection and arrangement of produce for exhibition and for market.

A representative of the Department or demonstrator was present to give information and distribute literature. Several charts and a collection of economic and weed seeds were on hand for reference.

The arrangement of the exhibit was supervised by Mr. H. E. Walker, B.S.A., Agriculturist, Telkwa.

THE ADVERTISING OF FRUIT

NOVA SCOTIA

BY M. CUMMING, B.A., B.S.A., SECRETARY FOR AGRICULTURE

RELATIVE to advertising fruit, the fruit growers of the Annapolis Valley have organized an advertising propaganda for this purpose. They were canvassed last winter and during the spring under the direction of the Nova Scotia Fruit Growers' Association, and subscribed for advertising purposes upwards of 5,000 barrels of apples. In addition the provincial government has given a cash contribution. Some time ago Mr. P. F. Lawson, who has had a large experience in connection with advertising in the

United States, and also in his native province, sailed for England and will devote the next few months to a special up-to-date advertising campaign in the leading cities of Great Britain. He expects to advertise largely through the firms who are making a specialty of selling Nova Scotia fruit. I may add that the fruit growers of Nova Scotia are quite sanguine as to the results of the advertising campaign which Mr. Lawson is now launching in Great Britain.

ONTARIO

CAMPAIGN OF THE NIAGARA PENINSULA FRUIT GROWERS' ASSOCIATION

IN order to understand fully the advertising campaign of the Niagara Peninsula Fruit Growers' Association, it must be noted

that the fruit trade interests of the Peninsula are largely in the hands of fruit dealers, fruit-selling associations and the commission merchants

in various towns and cities. The dealers and selling associations ship largely on order at stated f.o.b. prices. The balance of the fruit, with the exception of a small quantity to the consumer, is sold through the commission merchants. No attempt is made to sell through a central selling association or through any agency that might regulate or control prices and distribution, but an attempt is made to prevent too great an internal competition among dealers and associations by quoting uniformly on the smaller express shipments. Because of these various interests with established trades and brands, it is impossible to pack and advertise for sale a recognized brand or pack of fruit at a fixed price for the Peninsula.

COMPOSITION OF THE ASSOCIATION

At the same time, the Niagara Peninsula Fruit Growers' Association is made up of growers, the dealers and others who are anxious in some way to stimulate the consumption of Niagara Peninsula grown tender fruits, and to this end the association is aiming through its advertising campaign to tell the consuming public weekly just what fruits may be had, something about their uses and where to obtain them. Five factors the association recognize as essential to the success of their selling campaign:

1. Fruit well packed.
2. Efficient dealers and selling associations.
3. Efficient transportation.
4. The cooperation of the retail trade.
5. A satisfied purchaser and consumer.

The aim is to please all interested in each and every package—to give the grower a fair living profit, to allow the dealer the smallest possible margin, to pay the transportation charges, to give the dealer a fair advance on cost, because next to the grower he takes the greatest risk, and to give the consumer a good article at a reasonable price. This is our "Full Value Fruit."

For fifteen weeks during the fruit season, bulletins of which the following are examples are being run weekly in the papers of the province and the near east and west. Two hundred and fifty papers in all carry the notice and it is estimated that in this way almost every family that takes both the city and the local paper has two opportunities of seeing the notice. An attempt is made where possible to get the bulletin in the local news items, but, failing this, to get it at least in preferred position. In no case is the bulletin buried in the regular advertising columns.

STRAWBERRY BULLETIN

This is to notify the Housewife that Niagara Peninsula Grown Strawberries are now ready. See your grocer for your wants—THE "WILLIAMS" IS THE BEST FOR CANNING. Place orders immediately with your grocer.

This bulletin, published on June 17th, opened the berry season, and, though we are told money is scarce, many are out of work and cannot afford to buy, and the people are becoming more thrifty, and, in spite of the fact that the canning and jam factories took comparatively few cases, the berry crop moved readily at a price that compared favourably with the best years in the business. The same might be said of sour cherries, and though many sold on commission at 35c. and 37½c. for eleven quart baskets, some selling associations were able to obtain 50c. and more for their growers. The demand continued strong until the last, and dealers report also not only a good demand but an extended market. The bulletins have reached consumers who never before purchased fruit.

FRUIT BULLETIN

The famous YELLOW ST. JOHN PEACH, Niagara District Grown, now at its best—will be followed by other

first-class varieties. Many varieties of Plums ready for canning. Housekeepers order PEACHES AND PLUMS now. Every grocer handles them.

The above appeared on August 26th, and was intended to cover the trade for the following week or up to September 2nd. Two other bulletins mention the Yellow St. John Peach—the first good yellow eating and canning peach—one leading up to the above and one following.

The bulletins are written some weeks in advance to ensure publication at stated dates and each consecutive bulletin develops logically certain facts. The dates for them are obtained from ripening dates, quotations, etc., of previous years, and though some variations may be noted because of the later or earlier

season, or variations in ripening throughout the Peninsula, the facts, as a whole, have to date been correctly stated.

The money has been raised by private subscriptions and by grants from the local councils. The response has been liberal, and it is hoped that with the work of 1915 as a basis, next and other years will see a marked advance, not only in the extent of the advertising, but also in the fuller cooperation of the selling agencies with each other, in order that distribution may be more extended and complete and the Fruit Growers' Association may be able to emphasize to a greater degree its battle cry, "Full Value Fruit." The business is being carried on by a committee selected by the Fruit Growers' Association from among its members.

BRITISH COLUMBIA

FRUITS ON THE CANADIAN PRAIRIES

THE advertising of British Columbia fruits on the Canadian prairies is described by Mr. R. M. Winslow, Provincial Horticulturist, in the Fruit Branch Circular of the Ontario Department of Agriculture, for September, 1915. Mr. Winslow's description is as follows:

The British Columbia Department of Agriculture and the British Columbia Fruit Growers' Association are cooperating in the advertising of British Columbia fruit and vegetables in the markets of Alberta and Saskatchewan this year, the funds available being devoted to several main purposes.

1. Newspaper and retail window card advertising of strawberries and raspberries. This advertising was timed especially to assist in movement of straight carloads of berries at each particular point, and, in conjunction, many free notices concerning the berry industry and the berries were given by the newspapers.

2. Advertising preserving fruits. From the 1st August to the end of September advertising in twenty-four prairie news-

papers in the form of weekly bulletins, about two-thirds column in length, emphasized the merits of British Columbia preserving fruit of various kinds in season. These advertisements require careful writing so as to meet unexpected delays or advances in the shipping dates of particular varieties. These bulletins are all headed by the crossed flag cut, and slogans emphasize the patriotic side of buying Canadian, and particularly British Columbia, fruit. The bulletins all carry a footnote offering a free eighty-page booklet containing two hundred and twenty-five recipes to enquirers.

3. Apple advertising. This has not yet been definitely settled on, but "Apple Weeks" and other advertising matter will be carried on in all the principal centres of Saskatchewan and Alberta, and plans are being laid for special apple weeks in the small towns as well. Apple advertising will reach its greatest intensity about the third week in October, about which time the movement of winter apples into the consumers' hands is at its height.

4. A big feature of this year's advertising is a booklet of eighty pages, illustrated by cuts of the principal varieties of apples, printed on good paper, with cover cut in three colours. The booklet

gives 225 tried and tested recipes for the use of various fruits, the general purposes and methods of canning, preserving and jam-making, also a special article on preserving fruits without sugar, and a list of British Columbia varieties of apples in tabular form, showing for each month the varieties suitable for consumption, both for dessert and cooking. The principal varieties are particularly emphasized. The booklet is advertised as one that will enable the consumers to make the most intelligent and economical use of their purchase.

5. Reading notices to be used in conjunction with advertising are being issued regularly to the prairie papers, which are

being reproduced very generally. These notices of course assist in the consumption of fruit generally.

6. Circulars are issued to all retailers every few weeks with special reference to seasonable fruits that deserve emphasis. These circulars place the handling of such fruits before the retailer as strongly as possible, and give timely hints as to selling points, etc.

7. On the whole the advertising campaign is making the best possible use of the appropriation, and as a result British Columbia fruit, despite untoward financial conditions, is going into consumption quite rapidly and at satisfactory prices.

SHORT COURSES

NOVA SCOTIA

BY M. CUMMING, B.A., B.S.A., SECRETARY FOR AGRICULTURE

THE short course at the College of Agriculture, Truro, N.S., will be conducted from Jan. 4th to 14th. "Greater Efficiency on the Farms of Maritime Canada" is the watch word, and an effort is being made to accommodate a large and representative attendance.

Dates have not yet been arranged for the remaining short courses, which, however, are local in character. In fact it is likely that these remaining short courses will have to be curtailed in number, for enlistment of members of the staff at the college has reduced the number of men available to conduct short courses. It is sufficient to state that some three or more short courses

will be held at local centres during the month of February.

The enrolment at the college this year is 57 in comparison with 80 at the corresponding date last year; owing, however, to the large amount of fall work that has to be done in Nova Scotia, we always have a considerable influx of students when the college re-opens on the 1st of January, so that just as in former years our attendance has approximated 100, I anticipate this year it will approximate 65 or 70. The difference is more than offset by the enlistment of senior students, and no doubt also by the large number of prospective junior students.

NEW BRUNSWICK

THE following Short Courses are announced by the New Brunswick Department of Agriculture.

(a) A ten days' free course in agriculture, from January 11th to 21st, 1916, at the Agricultural school, Sussex. This course will include

lectures and demonstrations in live stock, dairying, poultry, field crops, soil management and drainage, horticulture, beekeeping, fertilizers, insect pests, plant diseases and noxious weeds.

(b) A winter course for teachers, from January 3rd to 8th, 1916, in the

Agricultural School, Sussex. This course has been offered as a means of providing facilities to teachers to better qualify themselves to give instruction to their pupils in those subjects that have a direct bearing in promoting the prosperity of the people and the development of the resources of the province. The Department of Education, recognizing the great value of practical training and objective instruction in the schools, is heartily cooperating with the Department of Agriculture in plans for school improvement, and has arranged that the winter school term for those teachers who attend this special course will begin on January 10th instead of January 3rd.

(c) A free short course in Agriculture and Rural Sociology for New Brunswick clergymen will be held in the Agricultural School, Sussex, from January 11th to 21st, 1916.

The aim of this course is threefold:

1st. To provide rural clergymen with such agricultural information and training as may not only be put into practice, but also help them to a better understanding of the daily problems of the farmers, and thus to assist in their solution.

2nd. To consider methods of assisting locally in the general movement for the improvement of agriculture in New Brunswick.

3rd. To create a greater interest in community betterment, and in the improvement of conditions affecting all phases of country life.

SUBJECTS OF STUDY

About two-third of the time will be devoted to lectures and practical work in different branches of farming and will include the following:

Beekeeping:—Life of the bee; care and management of the colony; honey production and marketing.

Dairying:—The production of clean, wholesome milk and cream. Babcock testing and butter-making on the farms.

Field Crops:—Judging and production of grains, grasses, clovers, potatoes, roots and corn.

Horticulture:—Orchard planting, renovation and management of old orchards, apple packing, fruit judging, and small fruit culture.

Poultry:—Poultry breeds, house construction, winter egg production, natural and artificial incubation, summer care of chickens, killing and dressing of poultry.

Soil Management:—Cultivation, drainage, fertilizers, crop rotations, control of weeds.

Weeds, Insects, and Plants' Diseases:—Identification and control of noxious weeds, injurious insects, and fungus diseases.

The balance of the course will be devoted to the consideration of the problems affecting the rural community, the country school and the country church.

QUEBEC

THE short courses in agriculture were so successful last year in the North Shore counties that the Hon. J. E. Caron, Minister of Agriculture, has increased the number of these courses. This year there will be two delegations of instructors, one of which will tour the north-east sector of Quebec (lower St. Lawrence) and the other the south and south-west of Quebec, on the Grand Trunk and Quebec Central railways.

The first group of professors under the direction of Mr. A. L. Garneau, visits the main centres along the G.T.R. between Levis and Sherbrooke and along the Q.C.R. between Sherbrooke and Levis. The second group visits the principal parishes along the I.C.R. between Levis and Gaspé district.

The teachers will have a quantity of material for demonstration to facilitate the teaching or illustrate the lectures.

Every week a half-day will be given to domestic science.

The course will last a week at each place and will include the following matters: Chemistry and soil chemistry, cereals, fodder plants, vegetable gardening, breeding of farm animals, poultry, horse-shoeing and veterinary hygiene, fruit growing, drainage, beekeeping, farm fertilizers and chemical fertilizers, maple products, dairying, forestry, domestic science, agricultural cooperation.

The pupils who desire to follow one of the classes or all the classes may do so on the opening day, on Monday. An examination will be held at the end of the week and certificates will be granted to the pupils who obtain a sufficient number of marks.

These short courses last year were attended by a large number of farm-

ers from various districts; some, even among the older men, entered their names as pupils and passed a successful examination. They were also attended by a number of pupils from the rural schools and educational institutions, who came with their teachers to hear the lectures given more especially for them.

The courses will be more elaborate this winter. The lecturers will be better equipped. A weekly program is sent to the parish priests, the officers of agricultural clubs, the agricultural societies and local newspapers.

All the farmers of the districts that are visited by one or the other of the two groups of lecturers are invited to attend the three sessions that are given every day and to discuss the science and practice of agriculture with the professors.

SPECIAL DOMESTIC SCIENCE COURSES

IN addition to the short courses given in the schools of agriculture during the last holidays, similar courses were given in the four leading domestic science schools of the province in continuation of the series started a few years ago.

At the St. Pascal Domestic Science school, 66 nuns attended, of whom 15 tried for diplomas and succeeded. The course lasted from July 18th to 31st. The programme of studies included: Methodology, cooking, house-keeping, washing and ironing, cutting and clothes making, horticulture, dairying, poultry, hygiene and practical demonstrations.

At the Roberval Domestic Science school 34 nuns attended, 12 of whom received diplomas. The course cov-

ered 15 days. The programme consisted of that adopted by the Council of Education with beekeeping and pedagogy added.

There were 18 nuns in attendance at the Sutton Domestic Science School, where the course lasted from July 5th to August 3rd. In the programme were included: cooking, practical medicine, making and repairing clothes, ironing, domestic economy, methodology, beekeeping, poultry, general agriculture and dairying.

Twenty-five teachers were engaged at the provincial Domestic Science schools, at all of which attention was given to the care of children, elementary chemistry and fancy work besides generally the subjects previously outlined.

THE ONTARIO AGRICULTURAL COLLEGE

FREE short winter courses at the Ontario Agricultural College, Guelph, were insti-

tuted in 1902 as an experiment. They proved extremely popular and of great practical value to farmers

and farmers' sons of the province who could not attend college for longer periods. Last winter almost five hundred farmers took advantage of the instruction offered at these free courses and a heavy attendance is expected in January.

For several years only the more general courses were offered, but instruction in special branches of agriculture was added from time to time as the demand was realized. In 1916 courses will be offered in stock and seed judging, fruit growing, poultry raising, beekeeping, apple packing and dairying. Following is a brief outline of the work covered in each course:—

Stock and Seed Judging (2 weeks) Jan. 11th to 22nd. This course touches points of interest to stockmen and general farmers. Judging of horses, cattle, sheep and swine, is a strong feature of the instruction. Some animals are slaughtered after being judged to demonstrate carcass values. A number of lectures on breeding, feeding and management of live stock are given and some common diseases are discussed. A couple of hours every day are devoted to seed judging. Purity, germination, selection, improvement of seed and weed problems are discussed.

Fruit Growing (2 weeks) Jan. 25th to Feb. 5th. The lectures cover all matters of importance both to beginners and to experienced growers. Orchard location; preparation of soil; nursery stock; spray-

ing; fertilizers; pruning; packing; marketing are a few of the points considered.

Apple Packing (1 week) Feb. 7th to 12th. Thorough instruction is given in both box and barrel packing. A packing expert takes charge of the course.

Poultry Raising (4 weeks) Jan. 11th to Feb. 5th. The four weeks course solves many problems for prospective poultrymen. Instruction is included in such points as incubation, rearing of chicks, feeding, disease, breeds, mating, judging, winter laying, fattening, poultry houses, etc.

Beekeeping (2 weeks) Jan. 11th to 22nd. The Provincial Apiarist is in charge of this department and successful bee-men assist him during the course. Particular attention is paid to bee diseases and their treatment, queen rearing, honey market, etc.

Dairying (3 months) Jan. 3rd to Apr. 1st.
Factory Dairy Course:—This course prepares young men to undertake the management of cheese factories and creameries. A dairy diploma is awarded when one year of successful management has been completed.

Farm Dairy Course covers completely all the dairy problems of the farm in both cheese and butter making. Farm dairy apparatus is used entirely.

Cow Testing Course, Mar. 27th to Apr. 1st. Every cow in the dairy herd should be systematically tested and only those producing a profit should be kept. This course gives reliable information in herd testing.

An illustrated calendar giving full information regarding all the courses will be mailed on request. Write The President, Ontario Agricultural College, Guelph, Ont.

THE MANITOBA AGRICULTURAL COLLEGE

BY J. B. REYNOLDS, M.A., PRESIDENT

THE following is a list of the short courses that will be given at the Manitoba Agricultural College:—

(1) A short course of two weeks—from January 24th to February 5th—on farm machinery, grain judging and stock judging. There will be practical instruction given on farm machinery for two hours each forenoon in the two weeks. Following that, two hours on grain judging. The afternoons will be devoted to stock judging. The College is equipped with its own slaughter-house, and opportunity will be furnished for testing the judging on the hoof by the final block test.

(2) A short course in poultry raising—January 11th to February 20th. Practical instruction in candling and storing eggs; feeding, fattening, and dressing chickens for the market, will be given; also in operating incubators and brooders. The course is open to any interested in this branch of farming.

(3) A creamery course from February 1st to 28th. This Course offers instruction in cream separators, butter-making, grading and scoring of cream and butter, milk testing, and cow testing. There will be, besides, lectures in laboratory work in dairy bacteriology and dairy chemistry.

For each of these courses a registration fee of \$2.00 is required; tuition free.

THE SASKATCHEWAN COLLEGE OF AGRICULTURE

THE annual convention of agricultural societies in the province of Saskatchewan will be held at the college of agriculture, University of Saskatchewan, during the first week in January. The second week will be devoted to the short course in agriculture which is held every winter at the college. Around these events revolve all the winter activities of the Department of Agricultural Extension. Last year there were thirty movable schools conducted in outside points in the province. It is hoped this year to increase this number to fifty.

These courses last from two days to a week and at the 150 odd sessions give instruction to about 10,900 people, not including several large classes at the normal schools. This year following the farmers' week at Saskatoon there will be courses of a week's duration put on at the larger normal schools for the benefit of the students attending there and as many of the farmers and farmers' sons of the surrounding districts as desire to attend.

The programme of the short course at the college includes instruction in practically every branch of agriculture on the curriculum at the college. The programme at the outside short courses is somewhat curtailed, but includes full discussions of the following topics: seed, germination and plant growth; choice of farm crops; cause of low yields; climate and its relation to Saskatchewan agriculture; investigation work in crop production; poultry on the farm, housing and feeding of poultry; poultry incubation; poultry killing and marketing; the draft horse; the dairy cow; feeding and care of farm horses; the dual purpose cow; the bacon hog; management of swine; sheep on the farm; breeds and types of farm animals; farm machinery; farm motors and farm buildings.

Normal school sessions will be

held during the winter at Regina, Saskatoon, Prince Albert, Yorkton, Weyburn, Estevan, Swift Current, Moosomin, and other places and the classes range in attendance from 25 to 200 and over. It is the intention as noted above to put on courses at these places at which the Department of Education will cooperate with the Department of Agricultural Extension and the agricultural Societies as well as the local city and town organizations such as the board of trade.

In addition to the above courses there are a number already planned to be held under the agricultural societies. This work which continues until the end of March will be greatly extended so as to include, as already intimated, at least fifty points. The courses are not restricted to the organizations referred to but are extended to all applicants whenever possible such as Grain Growers' Associations and Homemakers' Clubs.

The Agricultural Societies' Convention itself will have many short course features as usual. It is the practise of the director to organise the convention with a central purpose, and every discussion and demonstration is planned for the purpose of developing what might be called the theme. Last year the theme was "The Agricultural Societies' Act", which comprises a sort of hand book of the societies. This year it will be "The College of Agriculture". The programme will bring out the actual relationship of the college to the societies and will exemplify as far as possible the ideal agriculture. This method of planning the programme has always resulted in creating additional interest in the convention. Delegates to the convention will see the actual working of the college and observe the influence exerted on the boys. They will also be entertained by the "Agro" classes.

NOTES FROM DISTRICT REPRESENTATIVES

ONTARIO

SUPPLIED BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

PEEL COUNTY

J. A. Carroll, B.S.A.:—

"We planned to encourage a patriotic spirit in the children and to afford them an opportunity of assisting in the war funds by a patriotic lunch scheme and war fund booths. The lunch plan was originated by Mr. Stark and used in Caledon and Albion. The pupils were asked to each prepare a lunch for two consisting of sandwiches, pastry or cakes and fruit. A class was opened for these and the prize winning box sold by auction and all the others were handed out at random at 25 cents each. Free lemonade and tea was supplied and the cost of these deducted from the lunch fund. This arrangement worked out very well and did not require too much time or attention from us on the day of the fair. At Caledon \$31.85 was realized from the lunches. In addition to this a quilt which had been made by the Alton school girls in their sewing classes was auctioned off and thereby \$10 was added to the Caledon township patriotic fund, making a total of \$41.85. Albion's contribution amounted to \$28.

"At Cooksville school fair people were very enthusiastic about their booth and we had very little worry about it after the committee had been appointed and a few suggestions offered. In spite of the fact that it rained during the afternoon and very few visitors gathered, about \$45 was realized directly; to this was added approximately \$15 donated by friends, which brought the total up to \$60.

"The Peel County Rural School contribution to the war fund may be tabulated as follows:—

ALBION	
Sale of patriotic lunches . . .	\$28 00
" War plot potatoes . . .	19 32
	————\$47.32
CALEDON	
Sale of patriotic lunches . . .	\$31.85
" war plot potatoes . . .	11.79
" Alton girls quilt . . .	10.00
	————\$53.64
CHINGUACOUSY	
War Fund booth	\$27.00

TORONTO

War Fund booth	60 00
Total	————\$187 96

"There may be a few potatoes to sell in the south townships which may be added to this grand total."

THUNDER BAY DISTRICT

G. W. Collins, B.S.A.:—

"During the past week I have been measuring the fields and weighing the turnips in the Acre Profit competition. I am pleased to report that out of twelve competitors in the Acre Profit competition, eight have completed the contest. The results of this competition have been very satisfactory and encouraging. Four of the eight competitors have produced more than twenty-five tons to the acre, and one of these four produced over twenty-nine tons to the acre. A great deal of friendly rivalry has been very evident in this competition. The majority of the competitors were sufficiently interested to visit each other for the purpose of comparing soil, cultural methods and crops, and it is common talk around Hymers that this competition was the cause of producing more turnips in the Hymers district this year than has been produced altogether in the last ten years.

"I trust that you will not get the impression that we are over-organizing in this district. I do not think we are, and what we want is efficiency and economy in production on the one side and the proper marketing of the products on the other. In view of this end we have organized a cheese company at Hymers to be known as the 'Whitefish Valley Cheese Company, Limited.' This company will be capitalized at \$2,000. Forty shares will be sold at \$50 each, and already 25 shares have been purchased so that it will be found an easy matter to dispose of the shares. Within a radius of five miles of Hymers there are 200 cows which will supply milk to this factory. While this number is rather small, yet we feel that when the factory is established, the number of cows will soon increase, and in fact two men have already promised to put in 30 cows as soon as the factory is built. There are also

many Fins living at Sellers, Nolalu and Whitefish on the P. A. & D. Ry. and we have interested these men in this scheme and they say they will be glad of the opportunity to sell milk to the factory. All this is very encouraging as it will develop a permanent and profitable business for our farmers who are living in these outlying sections of this district."

DUFFERIN COUNTY

H. A. Dorrance, B.S.A.:—

"I acted as judge on corn, roots and vegetables, etc., at the Markdale Fall Fair and also while there took the opportunity of discussing with the officials of the Hydro-Electric Commission the question of farm-power for a number of our farmers who have been enquiring with reference to this matter. I might state that a number of farmers in the vicinity of Laurel are becoming interested in the question of Hydro-Electric and wish the line, if possible, to be carried through their village, and have asked me for assistance along this line, and I am given to believe that there is a possibility in the near future of their being served with Hydro-Electric power."

GREY COUNTY

H. C. Duff, B.S.A.:—

"At the School Fair centres where Mr. Clark of Cainsville acted as judge of poultry, a few minutes were spent in discussing the birds that he had judged, coops in which they were placed, problems in feeding, etc. His information was greatly appreciated by both children and parents and we feel that something more along these lines should be carried on next year. We have always made a practice of sending a letter to the schools explaining how better selections of potatoes, corn, etc., could be made for the next Fair. These letters are not sufficient and we believe that next year it would be wise to have reasons given for the placing of all classes.

"We find that it will be necessary for us to use earlier maturing varieties of oats and potatoes for the low lying portions of our country. The O. A. C. No. 72 Oats and Empire State potatoes are exceptionally good for long, dry seasons, but were complete failures in many sections this year. The school fairs are certainly valuable for showing what varieties of grains and roots are suitable for the various districts. We hope to be able next year to choose varieties that will prove exceptionally valuable to the farmers of all sections for average years."

DURHAM COUNTY

R. S. Duncan, B.S.A.:—

"I visited all the boys in our Junior Farmers' Improvements Association who undertook to conduct an experiment or demonstration for us in the season of 1915. They consisted as follows:—

Corn experiment.....	9
Acres Profit (potatoes)...	4
" " (mangels)...	8
Potato Variety tests...	4
Alfalfa Experiments.....	7

"Besides these we have been visiting from time to time, the boys in the Feeding Hogs for Profit competition, results of which will be sent you at the conclusion of the competition.

"In the corn experiments, I may say that with one exception the Wisconsin No. 7 and the Golden Glow headed the list for silage corn according to our method of scoring in the field. Each of the boys concerned has undertaken to estimate the yield by weighing ten respective hills in each plot, afterwards husking the corn and getting the weight of the cobs.

"In regard to potatoes, owing to the unfavourable wet season, some of them were almost a failure, many being badly rotted and a number being small owing to the blight having struck them before they completed their growth.

"The alfalfa experiments have turned out remarkably well. Two lots of Grimm were sown for seed production in rows 30 inches apart. There is an exceptionally good catch in each of these fields and if the alfalfa winters well we shall be able to harvest considerable of the Grimm seed, which, of course, will be used in the county. I also secured one bushel of the Ontario Variegated which I divided into three lots. This was sown by three of the boys on a bare fallow about the middle of July and it has come along splendidly. In the sand region west of Kendal I tried an experiment on Sweet Clover, the seed of which was obtained from Mr. Linton of Aurora. This gives equally as good promise as the alfalfa and the farmer conducting the experiment had become quite enthusiastic over Sweet Clover on the worn out sand lands."

OXFORD COUNTY

G. R. Green, B.S.A.:—

"This, as you know, was the first year we attempted a school parade at school fairs and our experience would indicate that it is certainly a feature which will we do well to continue in the years to come. Even the schools which, in the Spring,

made a very weak showing, came out strongly in the parade, and the parents of the pupils in these sections were very proud of the showing made. One can best realize how important a feature it must be for the children, when the Director comes out on horseback, wearing a red coat and white helmet, carrying the school flag, and leads the others, who sing patriotic songs and give the school yell. At Drumbo, only one horse appeared in the parade. At Brownsville, two horses and an automobile suitably decorated for the occasion were in evidence. The parade in every case would have been a valuable addition to any fair in the County.'

SIMCOE COUNTY

J. Laughland, B.S.A.:—

"The following letter was received from a teacher of one of the schools near Moccasin, where the Fair was held last Tuesday, and shows how this teacher at least appreciates the School Fair. The letter was not solicited and came from a teacher that I had not met until the day of the Fair:"

"Coldwater, October 13, 1915.

"Mr. Jas. Laughland,

"Collingwood, Ont.

"Dear Sir,—

"I wish to write thanking you and your assistants for the benefit which this school has derived through the work of the School Fair. Outside of the lessons learned through working in their plots, there is a great interest aroused in the school. If those Fairs are continued, as I hope they will be, they will go a long way toward making the girls and boys look upon the work on the farm as a pleasure, not a drudgery, as many of them do.

"Last week one of the little girls came racing into the school room one morning. She could not wait to get her breath before she said, 'Oh! teacher, I dug my potatoes yesterday and I got a bag and a half and I only planted ten.' One of the boys said his potatoes were the best going and his father was going to buy his for seed next year.

"The people and the children were delighted with the Fair yesterday and the children are beginning to plan for next year. One of the boys this morning gave his opinion, 'The whole thing was a howling success.'"

"We have perhaps not done as much or taken as much interest as we might have but we appreciate very much the work done and I am sure both teachers and pupils as well as the parents are united in their wish for the work to continue

and in their resolve to do more towards it in the future.

"Wishing you every success in the work you are carrying on,

"Yours very truly,

(Signed) Laura Mawdsley, S. S. No. 17"

FRONTENAC COUNTY

C. Main, B.S.A.:—

"Other miscellaneous work consisted of giving instructions regarding the filling of silos; the cutting of new seeded alfalfa, in order that it would not lodge and thereby smother the crowns. In cases where the alfalfa was 18 inches and over we advised cutting of the same as high as the mower would run, approximately seven or eight inches, and the harvesting of the same. Where the new seeded alfalfa was, say 15 to 18 inches, we advised cutting it as high as possible, and leaving the tops which were cut off to fall down among the stubbles and remain. The stubbles which were left, due to their stiffness, would not lodge, but rather would stand up allowing the snow to sift down among them, thereby holding same, forming a protection for the crowns. The tops of the alfalfa which were cut and fall down among the stubbles would form a light mulch, not heavy enough to smother the crop and yet form a sort of protection for the winter. Instructions regarding alfalfa culture in any respect is greatly appreciated in this county, as the growing of this important crop is somewhat new to many of the farmers, for at present they are taking exceedingly great interest in this plant and are very anxious to grow it where their land appears to be suitable. If we are successful in growing alfalfa seed in this county, which I have every confidence we will be, the farmers will soon take the matter up with much greater enthusiasm, and before long every farmer will be growing a certain amount of alfalfa. The great drawback in growing alfalfa in this county being the winter killing of the crop, we are of the opinion that home grown seed will be able to withstand the climatic conditions and thereby would be a great boon to this particular crop in this county."

RAINY RIVER DISTRICT

H. M. McElroy, B.S.A.:—

"Our first school fair which was held at Barwick on Tuesday, September 28, was a success from every point of view. The concert consisted of numbers from the different schools, and a few addresses. We made a little variation in the payment

of the prize money this year. There is no bank at Barwick, and to avoid exchange on cheques we had the president and secretary of the finance committee come up on the platform after the concert and pay the money out in cash. We did not have a hitch by this method, and I like the idea because matters are all cleared up on the day of the Fair. The prize ribbons pleased the pupils greatly. It was a common sight to see some budding agriculturalist coming down the street with an array of multi-coloured ribbons across his chest, looking like a Cree Indian in war-paint or a veteran of many campaigns."

MUSKOKA AND PARRY SOUND DISTRICT

F. C. Paterson, B.S.A.:—

"I spent some time at Powassan in visiting the boys who are in the Potato Growing competition. I found many of the plots in first class condition although on some of the clay land which is common in that neighborhood there is considerable rot. I spent considerable time at each of the boy's places and told them about the course which I hope to conduct at Powassan this winter and also got them interested in the competition in judging live stock at their Fair, which was held on Sept. 30. We were successful in getting seven young fellows to enter the competition in judging stock and it proved to be probably the main attraction of the day. We had the boys judge a class of agricultural teams and a class of beef heifers. One of the interesting features in connection with this competition is the fact that the boy who was least considered by most of the people as likely to win the prize was the one that won the plough which was offered as first prize."

LEEDS AND GRENVILLE

W. H. Smith, B.S.A.:—

"We have been looking after the judging of the corn variety tests, and when we receive the weights from a couple of the men, we will be able to report fully regarding this test. Without having all the weights at my disposal would say that the Wisconsin No. 7 has in every case demonstrated its superiority as an ensilage corn. Its vigorous growth of leaves, and its characteristics of having a large number of good ears make it the corn *par excellence*. Its chief drawback is that for this country it has hardly early enough maturity, although I believe it is a rare season indeed that Wisconsin No. 7 will not come to efficient maturity to make good silage. The Golden Glow had

in most instances shown the earliest maturity of the Dents, and it has given remarkably good yields of fodder and ears. I think possibly the Golden Glow comes second to Wisconsin No. 7, although Bailey has given it a hard run in a number of cases. Taking our eight lots as a criterion, I am inclined to believe that the White Cap Yellow Dent has given us the poorest returns of all the Dents. In the Flint corn it is hard to draw a line. Some of our plots showed North Dakota considerably better than the others, while in other plots the Longfellow seemed equal to North Dakota. For strictly husking purposes, I am inclined to favour North Dakota and Longfellow in preference to Compton's Early. I feel sure that the corn variety tests conducted over the Province this year will aid materially in bringing to the farming community the difference in the varieties of corn and necessity of paying attention to the securing of proper variety for the purpose intended."

YORK COUNTY

J. C. Steckley, B.S.A.:—

"I attended the meeting of the Woodbridge Junior Farmers' Improvement Association. After addresses by the president, a few other members and myself, we laid out a series of meetings for the coming winter months. The following programme was drawn up: In the month of November we decided to hold a stock-judging course under the auspices of the class. We formed our committees and made all arrangements. In December the meeting is to be addressed by a man from Toronto to whom several of the boys are selling produce now. The January meeting is to be addressed by the District Representative; the February meeting is to be held in conjunction with the short course at Richmond Hill; in March some kind of a seed meeting.

"One of the boys told how the course last year had benefited him. Last year he was unable to sell his apples, so this year he decided to box pack them. He is realizing at the present time \$1.25 per box and getting the boxes back, this is for all the varieties he has. We spent only one day at box packing last year and only a few of the boys took much interest in the work. However it seems we accomplished a little by it."

KENORA DISTRICT

P. Stewart, B.S.A.:—

"Our three school fairs held on Tuesday, Wednesday and Thursday were entirely successful. The weather was ideal for

the occasion which was lucky considering the long distances which people have to come. Entries were numerous and every class was well contested. Outstanding features of our Fairs were the quality of all produce exhibited, the intelligence displayed in the selection of show material by the children, and the neatness and uniformity of grain and root exhibits.

"It was a surprise to see the large entry in weed and weed seed collections. Almost every collection was perfectly mounted and named. It was not uncommon to find collections which would not compare favourably with those handed in by the second-year students at Guelph. For the weed-naming contests we selected twenty specimens at random and there were young boys and girls so well posted as to be able to name the lot without hesitation or mistake. When one gets results like this from a simple weed campaign such as we conducted last summer, it is encouraging. A knowledge of weeds such as was displayed means something too for the clover seed industry of this district. Next year we expect to put on a weed-seed naming contest and increase the number of prizes for weed classes.

"The merchants have very willingly agreed to handle war plot potatoes and we have notified the children to turn their crop over to a certain store or keep it if desired at 60 cents per bushel."

ONTARIO COUNTY

R. M. Tipper, B.S.A.:—

"One man whose boy took Empire State potatoes last year for his School Fair plot showed me a sample that the boy was exhibiting this year and stated that they were the best potato for his farm that he had yet tried and that he had enough seed to plant his entire crop next year and intended to grow nothing else. He says one feature he noticed in their favour was that they grew a very vigorous top and they were in that way able to overcome blight and insects better than other varieties he had tried. Another man came to me and told me of the great success his boy had achieved with the O. A. C. No. 72 oats supplied last year. He told me that from last year's plot they threshed 17 pounds of oats well cleaned and from this 17 pounds this year they had over 25 bushels of excellent seed. The boy exhibited a sample of them at the Fair and it was certainly No. 1. He ended up by saying that he had not yet sown an oat that could compare with them. While we are not always getting concrete examples of success as achieved in this case we continually run across those who tell us that they never saw anything do so

well as the plots have done with the seed we have supplied."

MIDDLESEX COUNTY

I. B. Whale, B.S.A.:—

"On Saturday we had our School Fair at Melbourne, and judging from the number of entries and the attendance, it was a decided success. Last year this Fair was held with the regular Township Fair, and the people thought that our School Fair would be a failure if held separately, especially when held on Saturday. However, the day favoured us and every school was represented. The quality of the exhibits was exceptionally good and the boys and girls handled the Fair practically themselves from beginning to end. One amusing feature of the day was when a man came with a wheel of fortune and throwing balls for candy and chewing gum and asked to be allowed on the grounds. We referred him to the president of the School Fair Association, who is a boy fourteen. The President refused him admission and the man came back and commented on the kind of president we had. The President's reply to the man was, that "he had just had a meeting with the Directors and they had decided under no circumstances to allow a wheel of fortune or anything like that on the School Fair grounds."

NORFOLK COUNTY

Geo. Wilson, B.S.A.:—

"I attended a meeting of the Waterford Fruit and Vegetable Growers' Association on Saturday and discussed with the members present the importance of quality in making a reputation for the association and enabling them to sell their goods. This is an association which has only been in operation for a year but has had a good deal of experience during the past summer and prospects for a prosperous year never looked better. The association buys, co-operatively, baskets, fertilizers, implements, seed, nursery stock, etc., for the members. They also sell the fruit and vegetables raised locally and as far as possible deal with wholesalers and retailers in what might be termed outside points. Mr. F. C. Hart, Director of the Markets and Co-operation Branch, was present and gave the causes of the failures realized by many associations in the hope that this association might heed its warnings. I have arranged with the directors of this association to hold a convention during the spring months and bring before the members the importance of variety and care in handling and marketing their goods and we shall also arrange to have some men present to discuss the advertising, marketing and business management."

QUEBEC

DORCHESTER AND BELLECHASSE

Abel Raymond, B.S.A.:—

"The directors of the Agricultural Society, division B, of Bellechasse county, invited the directors and members of division A of the same county to pay them a visit. About one hundred and fifty farmers accepted this invitation. The object of the meeting was to discuss the methods of farm management followed by the members. As sheep are a very valuable factor in clearing land in this district, sheep breeding was one of the main items on the programme. It was shown that the production of wool in addition to the meat is an important source of revenue. Some farmers have demonstrated that sheep can be shorn twice a year, in April and in July, without their health being affected. They claim that the yield is better and that summer wool sells at a higher price because it is finer and of better quality."

AGRICULTURAL ORGANIZATION

"Over two hundred farmers were present at a lecture which I gave on 'Agricultural Organization' at Ste. Rose. The need of a co-operative society is greatly felt in this district, especially this year, as the crop is poor and the farmers will have to purchase fodder to winter their stock. Owing to the lack of grain and fodder, the dealers take advantage of the situation to purchase the cattle at very low prices. If these farmers had a co-operative association, with sufficient organization to manage the sale of their cattle, they would not now be in such stress. Fortunately, the need of co-operation is well realized and the principle of cooperation is everywhere approved. The profits made by the members of the cooperative society of the neighbouring parish have been a splendid object lesson, and members are being rapidly recruited; in four days forty-nine farmers have subscribed \$1,290.

"For some time, the requests for information on cattle osteomalacia, a disease commonly known as sore foot, have been greatly increasing. This disease causes terrible havoc in my district. Lately, I heard some farmers say that they had lost several head of cattle and that they were able to save only twenty-five per cent of their calves this spring. Several remedies have been suggested, but the results will only be temporary, so long as a practical means has not been found to supply to the soil the phosphate of lime which is lacking. The soil is poor in phosphoric acid and lime, and when we

find a way to return these elements to the soil, farmers will be able to give better balanced rations to their cattle and their herds will keep in better health."

BAGOT AND DRUMMOND

R. A. Rousseau, B.S.A.:—

"Excellent results were obtained on the small plots sown with seed which had been granted a prize at the Quebec fair last January. The best plot of wheat which was sown at the rate of three pounds of seed gave a yield of sixty-five pounds; the best barley plot sown at the rate of three pounds of seed yielded eighty pounds.

"We advise orchard owners who want stocks or roots for grafting, to sow apple seed to secure the same. Some farmers have done very good work in this direction. Their nursery is well kept; the soil of their orchard is sown with a cover crop and is well worked during the first part of the season. The soil is well drained. There is a lack of shelter belts, but many farmers intend to grow some next spring with Carolina poplars or spruce. The orchards that were worked under our instructions last spring gave a much better yield than in past years, and the owners all agree in saying that the teaching of better methods of orchard management gives splendid results everywhere. The results of pruning and spraying are keenly appreciated."

QUEBEC AND MONTMORENCY

Alphonse Désilets, B.S.A.:—

"The agricultural school fairs organized by the district representatives were very successful. There were numerous and splendid exhibits from school gardens, home gardens, needle and crochet work and culinary work. Gardening tools were given as prizes by the Quebec Department of Agriculture: watering pots, flat-toothed spades, rakes, planters, hand hoes, etc. Three poultry school fairs had also been organized in my district. The prizes consisted of poultry keeping implements, such as trap nests, troughs, hoppers, ovoscopes, etc.

"A visit to the women's clubs has convinced me that the success of these institutions has more than fulfilled the hopes of the Department of Agriculture. Thirteen model poultry houses have been built by a club composed of about twenty members, and several farmers following this lead have also built the same poultry houses and strictly followed the plans. Out of

two hives of bees supplied in the spring by the Department of Agriculture, the girls of the club have obtained six good colonies by natural swarming and harvested forty pounds of honey. This club now owns twelve hives in a place where beekeeping had so far been unknown. Co-operative club gardens have also had the effect of encouraging the establishment of gardens in the city; there are now fifty-two such gardens. The useful, though quiet work of these clubs clearly shows the usefulness of these rural organizations in our province."

ROUVILLE AND IBERVILLE

Henri Cloutier, B.S.A.:--

"The exhibit of apples from the co-operative societies of my district, and intended for the Quebec Provincial Fair, were prepared under my direction and I took advantage of this opportunity to give a few demonstrations in the packing of apples for the market. Some carloads of apples in barrels were sold and a good number were stored in the warehouse. I made an enquiry in order to ascertain the number of silos built in the smallest parish of Rouville county; the results of this enquiry show that there are 18 silos.

"The boys and girls gardeners displayed a number of fine exhibits at our school fair. There were some 168 fowls and 180 exhibits of vegetables and some fine collections of fruit. The clergy took a great deal of interest in this movement and helped by all possible means. This school fair was visited by over five hundred persons."

PONTIAC COUNTY

J. K. King, B.S.A.:—Macdonald College Demonstrator:—

"It is gratifying to note the number of farmers that are making use of the product of the school fair plots. The same is even more pronounced in the case of chickens hatched from the free distribution of eggs.

"A very successful killing, plucking and packing demonstration was held on the 4th of November, some forty birds were killed, and everyone wishing to get practical experience was allowed to kill a number of birds under the direction of Mr. Taylor the poultry expert.

"The Pontiac Wool Growers and Sheep Breeders' association has obtained forty-five registered rams for its members this fall, as well as a number of registered ewes.

"The loss from smut in oats and wheat has been very heavy in the county this season and the farmers that made use of the formalin treatment are exceedingly well pleased with the results.

"The farmers producing registered grain in the county are reporting exceptionally good yields. From present figures they have some four thousand bushels of Banner oats, four to five hundred bushels of Arthur peas and a smaller quantity of O.A.C. No. 21 barley for sale.

"The number of applications for underdrainage surveys is steadily increasing, plainly indicating that all the farmers are fully alive to the great advantages of underdraining."

This principle applies to every stage of civilization and progress. The greatest advancement is made by those who are capable of taking greatest pains. It applies especially to agricultural progress. It is more trouble to select than not to select seed, and to select it in the field than in the bin. It is more trouble to test cows than not to test them, to keep accounts than not to keep them, to diversify or rotate crops than not to diversify or rotate, to mix fertilizers intelligently than to buy them already mixed, to co-operate with one's pig-headed neighbors, especially if one is himself a little pig-headed, than to go it alone. It is also more profitable. In all these and a multitude of cases it is found that it pays to take trouble.—*T.N. Carver, U. S. Department of Agriculture.*

PRINCE EDWARD ISLAND

REVIEW OF SEASON'S WORK

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE

MUCH of the work carried on during the summer months under THE AGRICULTURAL INSTRUCTION ACT had to do with live stock or live-stock products.

COOPERATIVE MARKETING OF WOOL

During the months of May and June an experiment was carried on in Prince County in the cooperative marketing of wool. Mr. W. J. Reid, B.S.A., District Representative had charge of the work; 5,616 lb. were assembled, a small amount of which came from King's and Queen's counties. The grading was done under the supervision of Mr. Hewson of the Live Stock Branch, Department of Agriculture, Ottawa. The wool was sold to J. J. Sears of Antigonish and brought 32.03 cents per lb.

SHEEP DIPPING

Sheep dipping demonstrations were carried on this year in those parts of Queen's and King's counties in which they had not been conducted previously. Cooper's Sheep Dipping Powder and the tank and outfit as illustrated on page 56 of "Sheep Husbandry in Canada" were used. The work in King's County was done by Mr. William Cass, and in Queen's County by Mr. Leo. McDonald. In all 7,137 sheep were dipped.

LIVE STOCK JUDGING CLASSES

Live stock judging classes were held in nine different sections of the province during the months of June and July. They were all

largely attended. The judging of cattle was the most important work done, but horses and sheep were also brought out. Agricultural picnics were also held at five of these and addresses delivered by members of the women's institute staff.

At the present time local branches of the provincial Sheep Breeders' Association are being formed.

DRAINAGE

A succession of wet seasons has brought the problem of drainage to the attention of the Department of Agriculture. In Prince county particularly the loss has been fairly heavy. As tile are not manufactured in this province and excessive freight renders the bringing of them from other parts impracticable, beds of clay suitable for the manufacture of tile have been located and some organisation work done. By way of demonstration a field near Wellington has been underdrained.

WOMEN'S INSTITUTES

Patriotic work has been occupying the attention of the seven hundred members of the women's institutes during the past year. Upwards of \$200 in cash has been given to the Belgian relief fund, together with a large amount of clothing, knitting and food supplies. Over \$1,700 in cash has been donated to the Red Cross society, also large contributions of Sox, shirts, caps, and bandages. This is in addition to the work being carried on by these same women through other organizations and does not represent the full amount of gifts from these

women. At present the institutes are busying themselves preparing Christmas gifts for the soldiers at the front.

SCHOOL CHILDREN'S WORK

An important feature of the fair held at Souris, P.E.I., on October 4th and 5th, 1915, was an exhibit of school children's work, collected from the schools in the neighbouring

districts. These exhibits consisted of vegetables grown in school gardens and home plots, collections of pressed weeds, collections of weed seeds, drawings, compositions, maps, muscular movement exercises, etc. The exhibit as a whole was a creditable one, and many of the individual exhibits showed that the boys and girls who had made them had taken care to do their best.

QUEBEC

REVIEW OF YEAR'S WORK

BY J. ANTONIO GRENIER, B.A., LL.D., DEPUTY MINISTER OF AGRICULTURE

FROM an agricultural point of view, the year 1915 has been characterized by several noteworthy events. Some of the facts that are considered the most important will be reviewed in this article, but I particularly desire to direct attention to the progress made by our cooperative societies during the last few years.

In the first place, there is the inauguration of our short courses, a first series of which was held last winter in the main agricultural centres, along the Quebec and Lake St. John railways, the Quebec and Chicoutimi, Canadian Northern and Canadian Pacific, between Quebec and Montreal. These courses, which lasted a week in each of the various districts, have taken the place of the special farming trains that had been circulating in the province. They were held in twelve communities and were attended by ten thousand people, men, women and children, an average of 833 per parish. So great was the success of these courses that we are now arranging to hold similar ones this winter in the district which extends from Gaspesia to Levis, on the Intercolonial, thence to Sherbrooke on the Grand Trunk, and thence along the Quebec Central railroad. These traveling courses,

in addition to those that are already given during the holidays in our schools of agriculture and our domestic science schools, reach a number of pupils, sons and daughters of farmers who cannot follow the regular courses of these institutions owing to the lack of time and money. Even the farms are visited by experts whenever possible.

The new annex to the Oka Agricultural Institute has been practically completed during the last few months, and the construction of the annex to the School of Agriculture of St.-Anne de la Pocatière is rapidly progressing. The capacity of these two schools will be almost doubled by these additions. Still the agricultural movement is such that it is probable these institutions will have to refuse pupils on account of the lack of space.

ORDER OF AGRICULTURAL MERIT

The twenty-fifth anniversary of the "Order of Agricultural Merit" was celebrated this fall by the Quebec Provincial Exhibition Board, with the cooperation of the Department of Agriculture. This "day of the farmers", the importance of which was heightened by the presence of the Lieutenant Governor and of the most prominent men of the province,

has certainly helped towards giving the "man with the hoe" a more legitimate pride in his profession. Once more, the best farmers have been recognized and set as an example to the rural class which should always endeavour to imitate he who, by intelligent farming, secures a decoration or a diploma from the Provincial Government. These celebrations have given everyone the opportunity to pay homage to these modern knights who, although unknown, are the best agents in the development of the national wealth and prosperity.

Of the 1,021 farmers honoured during the last twenty-five years about six hundred survive and three hundred were present at this celebration and received a commemorative medal.

THE ABATTOIR SCHOOL AT ST. VALIER

The abattoir school which was built last year at St. Valier, near Quebec, by the Department, had to be considerably enlarged this year, in order to answer the requirements of the district, and to fulfill the object for which it was built. The aim of this establishment is to form experts in the cured meats industry, to stimulate the breeding of bacon hogs in the district and in the province, and to teach the best methods of breeding, slaughtering and curing. It has received several pupils already. Small abattoirs are also provided at our three schools of agriculture, where the students may specialize. As a result of the information forthcoming at St. Valier and of the lectures given on the subject throughout the province, a cooperative society, with a capital of about \$25,000, is now building an abattoir at Stanfold, Arthabaska county. A similar society has been established at Mont Laurier, Labelle county, where it is proposed to establish a plant of the same kind. The greater part of the products of the St. Valier abattoir school are now sold at Montreal by

the Quebec Cheesemakers' Cooperative Society.

A HOG-BREEDING CAMPAIGN

The lecturers of the department will soon start on a strenuous campaign to encourage the farmers to breed more pigs in the province and to prepare them specially for the export trade. Bacon manufacturers are ready to buy any quantity of bacon hogs at paying prices, and they have agreed to support the government in its campaign by granting a premium on quality and by refusing campaign pigs that are not well finished.

PROGRESS OF COOPERATION

A word as to cooperation in the province of Quebec. There are now, in Quebec, 146 cooperative societies, that is one per 13,720 inhabitants, while in Switzerland and Denmark, where cooperation particularly flourishes, there is a cooperative society to every five or six hundred of the population. In England there is a cooperative society to every 1,100 people. We are certainly behind these countries, and it should not be imagined that all our cooperative societies are prosperous. However, quite a number are doing well. Among the latter, the Quebec Cheesemakers' Agricultural Cooperative Society and the Agricultural Cooperative Association of Yamaska Valley deserve to be mentioned. The first, established in April, 1910, deals specially in the trade of butter and cheese, to which have been added lately meats, eggs, fowls, sugar and maple syrup. The second, established in May, 1911, handles tobacco. Both pay their members according to the quality of their products, which are graded by experts.

QUEBEC CHEESEMAKERS' SOCIETY

The Quebec Cheesemakers' Agricultural Cooperative Society which has a subscribed capital of \$13,730, and a paid-up capital of \$2,088,

did business last year to the amount of \$1,700,000. This year, the total business of the society to date, that is for the first ten months, will be \$2,000,000, and \$2,500,000 will be reached by the 31st of December. This society made, in 1914, \$11,-815.13 net profits, and it had, on the 31st of December, 1914, a total surplus of \$17,761.84 after paying 6 per cent dividends. It now includes 1800 members. These are striking results and it should be stated that if the Department of Agriculture has helped these associations, yet no subventions of any kind were granted.

This society has greatly helped towards the improvement of dairy produce by its grading methods, by its notices and circulars addressed to the members and specially by the information which it was able to give to our factory inspectors. This information enables them, in practically all cases, to see the evil and to apply a remedy.

METHODS AND SUCCESS

The following method is adopted: on arriving in Montreal, the business headquarters of the association, the butter and cheese are graded by disinterested experts, who note the defects of each product and notify the producer, advising him also that his products would have commanded a higher price if the quality had been better. The probable causes of the defects are indicated. These notices are sent from week to week. If the defects do not disappear, an inspector is sent to the factory to give suggestions on this point as well as to make a practical demonstration. The association has succeeded in transforming into first class factories butter or cheese factories that were of second or third class before.

The splendid success which has been achieved by the butter and cheese of the province of Quebec at Toronto and Ottawa exhibitions is

due to the joint efforts of the association and of the Department. It may also be safely stated that the association has not only paid its members a higher price for their products than was paid in the past but it has also helped, by the competition which it has created, in improving the market for the patrons who do not belong to the association.

A TOBACCO CULTIVATING SOCIETY

The Yamaska Valley Cooperative Association operates in the district of which it bears the name and which is well known for its tobacco. The headquarters of the association are at St. Césaire, Rouville county. It includes 350 members, the majority of whom are tobacco growers. It has a subscribed capital of \$37,000 and a paid up capital of \$26,400. The total business of the association, up to the 31st of December, 1914, amounted to \$150,000, and during the last three years it has realized a net profit of \$44,395.49. It has paid to its members an annual dividend of 6 per cent while accumulating a total surplus of \$61,195.49. The association owns a magnificent warehouse and conducts an experimental field for the growing of tobacco under shelter, as well as a demonstration curing house. The association is doing much to improve the yield and the quality of the tobacco crop in the Yamaska Valley and it protects its members, who formerly were at the mercy of the purchasers, pays them important profits, in addition to the benefits that are accumulating.

Such are the results that have been achieved in a few years by two cooperative associations in spite of the difficulties surrounding growing associations and in a country where the idea of cooperation has only started. With goodwill, mutual understanding, good organization and good administration, many other associations could do as much.

SIXTH ANNUAL SALE OF THE BREEDERS' ASSOCIATION

BY J. A. COUTURE, SECRETARY, BREEDERS' ASSOCIATION

THE sixth annual sale of pure-bred animals for breeding purposes was held under the auspices of the provincial breeders' association, on October 13th at Montreal and on October 20th at Quebec. The number of animals offered was as follows: 109 head of cattle (Canadian, Ayrshire and Holstein); 144 sheep and 137 swine. The number of animals of each breed sold at both places was as follows:

	Montreal	Quebec	Total
<i>Cattle:</i>			
Canadian.	12	21	33
Ayrshire	38	23	61
Holstein.	11	4	15
Total	61	48	109

<i>Sheep:</i>			
Leicester . . .	22	40	62
Cotswold . . .	11	4	15
Lincoln	8	4	12
Hampshire . .	11	9	20
Oxford	17	4	21
Shropshire . .	9	5	14
Total	78	66	144
<i>Swine:</i>			
Yorkshire . . .	17	33	50
Chester	12	47	59
Tamworth . . .	7	10	17
Hampshire . .	0	2	2
Berkshire . . .	3	6	9
Total	39	98	137

The numbers of males and females were: cattle, 75 males and 34 females; sheep, 70 males and 74 females; swine, 91 males and 46 females.

The prices, especially in the case of the swine, were not as satisfactory as in previous years.

WOMEN'S INSTITUTES

BY A. DESILETS, B.S.A., DISTRICT REPRESENTATIVE

THE women's institute organization has now been working for a year in the province. There are four women's clubs, namely, at Chicoutimi, Roberval, Champlain and St.-Casimir. These clubs have a two-fold purpose—social and economical.

Social:—To create, among young country girls, a liking for country life by the establishment of country libraries and by a joint study of agricultural questions of particular interest to the community.

Economical:—To help one another in the development of small industries such as poultry keeping, beekeeping, gardening, etc.

In order to achieve these purposes, the clubs have appointed directors and have prepared a programme and a constitution, simple but eminently practical. At the monthly meetings, contributions on some topic of the

day are read by the members. General discussion follows. Each member makes it her duty to let the meeting know the results of her work since the previous meeting. Instructors in the various branches of farming have been sent out this year at the request of the clubs by the Provincial Department of Agriculture.

At Chicoutimi, where the club includes three girls from the city and about twenty from the country, thirteen model poultry houses were built and a dozen bee hives put in operation during the summer of 1915. With the help of the poultry and fruit culture divisions, pure-bred fowls and fruit trees and shrubs were distributed, through the women's institutes, among the most progressive farmers of the locality.

In Lake St. John the women's club at Roberval includes about sixty women and girls. A half-dozen bee hives, two model poultry houses and some fruit-tree plantations were established this summer. A cooperative garden was started, seeded and worked by members of the club under the direction of Madame J. E. Boily. As a result of this move, some fifty-two new gardens were established in the locality. This cooperative garden has been used for practical demonstrations and the growing of flowers, tomatoes, celery and other vegetables. Each month, at the Ursuline domestic science school, young women meet to hear lectures on domestic economy and on the smaller branches of farming.

The clubs at Champlain and St. Casimir also have periodical meetings and discuss questions of interest to the locality. The members of these clubs help the district representatives in carrying agricultural teaching to the rural communities that cannot be conveniently reached by the school.

A successful school fair was held at St. Casimir de Portneuf, Quebec, on September 11th, 1915. Competition was keen among the contestants for honours from St. Thuribe, Ste Anne de la Péraide, Notre-Dame des Anges, Grondines, St. Alban, St. Ubald, Rivière Noire, Port Rouge and St. Casimir. The exhibits made by the children totalled 500, and these included hand-selected sheaves of grain, squash, cabbage, tomatoes, various fruits, and poultry, the latter including seventy-five chickens hatched from eggs distributed by the Quebec Department of Agriculture. Mr. Raoul Dumaine of the Department of Agriculture gave a demonstration in the killing and plucking of poultry. After the awarding of prizes in the various classes, addresses were delivered by Mr. J. C. Maynan, District Representative and organiser of the fair; Mr. Henri Grandbois, Mayor of St. Casimir, and others prominently identified with educational movements throughout the province.

MANITOBA

THE WINNIPEG INDUSTRIAL BUREAU

BY CHAS. S. ROLAND, SECRETARY

WINNIPEG business men have taken practical steps toward providing fuller knowledge of the problems that affect men in city occupations who have a desire to go on the land. Representatives of the industrial, commercial, financial, educational and agricultural interests of the city and province recently met under the auspices of the Winnipeg Industrial Bureau and formed an Agricultural Education Committee with the object of encouraging in every way possible, through a series of agricultural lectures, the city people who are thinking of taking up farming as a permanent occupation.

This move by the thinking men of the Manitoba capital will prove to be one of the greatest importance to the city and province, and will undoubtedly be taken up in other large industrial centres throughout Canada, where business men recognize the fact that if people accustomed to city life are to make a success on the land they must have some scientific knowledge of agriculture. At the meeting of the Winnipeg Industrial Bureau it was announced that a course of seventy night lectures on agriculture would be given this winter in the public schools. The chief subjects to be dealt with are farm mechanics; field husband-

ry; animal husbandry; dairying and poultry.

These lectures will be in charge of experts from the Manitoba Agricultural College working in connection with the Public School Board, and will be carried out under the auspices of the Agricultural Education Committee of the Industrial Bureau. There has already been considerable work done through lectures last season by Professor S. A. Bedford, a member of this committee, and during the past few months practical working plans have been prepared and much organization perfected. The advantages of farm life as compared with city occupation will be shown in pictures on the screen, and the men who want to know how to go about obtaining a homestead and what should be done to make a success of it in the first, second and third years, will be told in simple, plain fashion.

To reach the city dweller who may be interested will be a part of the work of the Industrial Bureau which has the cooperation of all the big industrial and commercial firms of the city. W. J. Bulman, the chairman of the committee who is president of the Imperial Home Re-Union Association that has assisted thousands of families to Canada pointed out that he had come in direct touch

with hundreds of men, heads of families, who came to Canada with a view of eventually settling on the land. He had become impressed with the fact that something should be provided to supply these men with the knowledge of agricultural conditions in Canada they sought. Professor Bedford told of his experience last winter when experimental talks to men in the city were tried out. Many of the meetings held were packed to the doors. The first lecture brought out 125 earnest listeners—men who had the real eagerness to go on the land. Each following lecture brought larger crowds of interested people with the result that he was confident in the success of the plan. The School Board, anxious to keep abreast of the times and to encourage education in all its phases, took the matter up and arranged through the Public Schools the winter course of night lectures for this season, and will carry all expenses in connection with the lectures. Those present were unanimous in their opinion that there is great scope for a wonderful, useful work to be done. With practical men in charge of these lectures who will be able to answer all questions that are important to the man who wants to know, it is sure that beneficial results will follow.

SASKATCHEWAN

THE WOMEN'S GRAIN GROWER ASSOCIATION

BY THE PROVINCIAL SECRETARY

THE far-famed farmer's movement, under the name of the Saskatchewan Grain Growers' Association, commenced the work of bettering rural conditions in this province. There is need for women in such a work. Hence women were welcomed as members of the association, and a women's section of the Saskatchewan Grain Growers came into existence. The

medium that women Grain Grower clubs give for the advancement of home and public welfare is the secret of their rapid growth. There are to-day a hundred such clubs in the province, making a membership of about fifteen hundred.

The force of such a body of women upon public opinion, the standard of education, and legislation affecting their interests is such that they

will soon be one of the great factors of western rural development.

WORK OF THE WOMEN'S SECTION

The work of the women's section of the association is based upon broad principles. Their sympathies are in accordance with the efforts of the association as a whole which has for its watchwords—education, organization, cooperation, emancipation. They endeavour to extend the knowledge of the members and their families along social and economic lines, with a view of elevating the standard of living in rural communities; to establish libraries, literary societies, reading rooms, arrange lectures and further aid in the progress of the community; to foster and encourage the cooperative method of distribution of farm products and the supplying of staple commodities; to make farm life more attractive, thereby keeping the young people on the farm; to increase the efficiency of the home-makers and raise the ideal of home life and work; to beautify the home, the home surroundings and the school; to work for better school boards with women among the trustees; to ascertain the views of the provincial legislature on questions directly affecting farm women; to foster and develop local taste for literature, art and music.

PLATFORM OF THE SECTION

The platform of the women grain growers' section includes such planks as banish the bar; woman's franchise; peace; rural education; cooperation; social centres; just dower law.

A provincial convention is held annually at which lectures relating to women's interests are given, plans of work arranged, resolutions adopted, and the provincial governing body elected. The management of the women's section is entirely under the direction of the officers elected by the women delegates. Parliament can be petitioned only with the sanction of the central executive

of the Grain Growers' Association, in order that the petitions of the women members may have the backing of the association as a whole, thus making them doubly effective.

In the payment of the membership fees women are governed by the same rules as are the men, one half of their fees going to the central treasury. This creates an indissoluble tie between the association and the women's section. In order that the provincial treasury of the women's section may have a supply of funds for working purposes, a grant for that purpose is given from the Grain Growers' treasury. A grant of one thousand dollars was given for the current year.

GOOD WORK ACCOMPLISHED

The great increase in sociability is one of the first most apparent results of the women's grain growers' club work. Members say that never until the meetings commenced did the women have the opportunity to really know one another.

Not only sociability but also the opportunity for social service is brought to the life of the members. A community is being awakened and an ideal for community life is becoming established. Effective work has already been accomplished by many clubs who have seen and supplied the need for rest rooms, cheerful school rooms, circulating libraries, shrubs and trees on school grounds, school medical attendance, school supervision during noon hour, more beautiful cemeteries, permanent community holidays, concerts, plays and the element of fun during the long winter months.

A discussion of the temperance question has been on the programme of practically every club. The members are unanimously in favour of the step taken in temperance reform by the action of Premier Scott in banishing the bars in the province.

The association has been instrumental in advancing educational work regarding the need of women for the franchise. To enable them to use in an effective manner their right of the franchise when it does come, the members study at their meetings the important public questions of the day.

SUBJECTS OF DISCUSSION

Topics that make for greater efficiency in the care of the home and the child have been predominant on club programmes. Better methods of marketing poultry, butter and eggs have taken the attention of many of the clubs. It has resulted in members cooperating to a greater degree in the disposal of farm by-products. The cooperative branch of the Saskatchewan Department of Agriculture has been instrumental in acquainting the clubs with the ad-

vantages of cooperative selling over the old method of bartering for goods from the country merchants.

Patriotic, Belgian Relief and Red Cross work have been loyally taken up by all of the clubs. In many cases large sums have been contributed toward these causes.

The clubs have carried on home philanthropy to a very great degree. Many families on homesteads and in need of clothing have been supplied by women grain growers with the needed articles.

From the small towns where fertile soil lay fallow awaiting the seed of social service, and from isolated districts thirty miles from a railroad come reports that our Women Grain Growers' Association is filling a long felt want. It is bringing us something new to think about, new friends to work with, and, above all, it has brought us contentment with prairie life.

SCHOLARSHIPS FOR BOYS AND GIRLS

PURSUANT to the adoption by the Saskatchewan Government of the "Agricultural Secretary" system, which has been in vogue for some years in the Western and Northwestern states of the American Union, a far-reaching step has been taken for the development of agricultural education in the province and the extension of agricultural training for the farm boys of to-day—the farmers of to-morrow. The new step provides for the endowment of scholarships for boys and girls at the College of Agriculture at the University of Saskatchewan.

The agricultural secretaries this year have gotten under way quite a number of competitions for boys and girls. Over 50 different competitions have been started in the 14 municipalities actively interested

in the agricultural secretary work. Ten of the municipalities held a municipal schools' fair early in October, when all prizes for the different competitions under way were awarded. As a grand sweepstakes prize to the boy or girl doing the best work in these competitions in each municipality, the line elevator companies operating country elevators in Saskatchewan and with head offices in Winnipeg donated the funds for scholarships of \$100 in the College of Agriculture, Saskatoon. One thousand dollars in scholarships will be awarded in 1915, and the same donors have promised \$2,500 for 25 scholarships in 1916 and \$4,000 for 40 scholarships in 1917. In addition *The Farmers' Advocate* of Winnipeg will give a year's subscription to each of the five contestants making the highest total score in competition for the scholar-

ships. The regulations covering the scholarships are as follows:—

RULES

1. Limited to municipalities employing agricultural secretaries who have undertaken numerous definite competitions for boys and girls.

2. All competitions to be held and premiums to be awarded at a municipal schools' fair. Judges for the fair to be supplied free by the department of agriculture, Regina, or the College of Agriculture, Saskatoon.

3. Limited to pupils between the ages of 12 and 18 years.

4. Each contestant must enter in five different competitions.

NOTE. - The following competitions are suggested as appropriate for the schools fair:—

- Live stock judging.
- Best halter-broken colt.
- Grain judging.
- Identification of plants and seeds.
- Collection of 50 plants and seeds.
- Best exhibit of grain grown under certain specified conditions.
- Best 10 ears of corn.
- Best 3 sheaves, 12 stalks each.
- Best peck of potatoes.
- Collective exhibit, four kinds of vegetables from school garden.
- Flower display from school garden.
- Best pair of crate-fattened spring chickens.
- Three 1-lb. prints of butter.
- Three loaves of bread.
- Girl's sewing competition work, one buttonhole.
- Three-minute address on any agricultural subject.
- Composition of 300 words.
- Maximum number of points for each of these to be 100.

5. Each contestant must write a composition of not more than 300 words upon one of the competitions in which he enters. This composition to be submitted to the Department of Agriculture, Regina, after the school's fair, together with the total scores made by the boys and girls in the various competitions, on the basis of which the final decision as to the winner of the scholarship will be given.

6. The agricultural secretary may select from the above competitions which may be suitable to his conditions and may add to his list such other competitions as may meet with the approval of the Department of Agriculture.

7. One month previous to the dates of the schools' fair, the agricultural secretary to submit to the Department of Agriculture an outline of the programme for the schools fair, giving the number of competitions which are proposed.

8. Scholarship to be awarded to the pupil making the highest total score.

HANDLING OF FUNDS FOR SCHOLARSHIPS

1. On November 1st of each year the Department of Agriculture will publish in all the daily papers in Saskatchewan a list of winners of the scholarships in the various municipalities, together with their post office addresses, and such other information of a general nature as may be of interest. A marked copy to be sent to each donor.

2. On receipt of this information the donors will deposit with the Department of Agriculture the sum of \$100 for each scholarship, which the said Department of Agriculture will deposit to the joint account of the winner, and the dean of the College of Agriculture, Saskatoon. This deposit to be made in the savings department of such chartered bank as may be most convenient to the winner.

3. Fifty dollars of this account to be withdrawable when said person registers at the College of Agriculture, Saskatoon, for the first year of the regular, associate or domestic science course.

4. Balance to be withdrawable when said person registers at the College of Agriculture, Saskatoon, for the second year of the associate or domestic science course.

5. First portion of the scholarship will be available any time within four years from the first of December in the year in which it was won.

6. Person winning the scholarship in the municipality will not be eligible to again compete for the scholarship.

7. Any scholarship or portion thereof remaining to the credit of the winner after the expiration of the time limit above mentioned will return to the scholarship fund.

8. The dean of the College of Agriculture and the Deputy Minister of Agriculture to act as a committee to decide any points not covered above and not incompatible with the spirit and the meaning of the agreement.

9. Each bank in which scholarships have been deposited shall furnish to the Department of Agriculture on request a statement as to the standing of each account on the 1st of January of each year.

LIVE STOCK COMMISSION APPOINTED

AT the last session of the provincial legislature on motion of Hon. W. C. Sutherland, the following resolution was passed:

"That in the opinion of this House it is desirable that the Government should appoint a Royal Commission to inquire into and report upon the question of the marketing of the live-stock and live-stock products of the province, and further, that the Government of the Province should approach the Government of the Provinces of Alberta, Manitoba and British Columbia, with a view to cooperating with them in the solution of this question as it affects these provinces."

In accordance therewith the Government have appointed the following commission:

Hon. W. C. Sutherland, M.L.A., president of the Saskatchewan Cattle Breeders' Association, Chairman;

Hon. W. R. Motherwell, Minister of Agriculture, Saskatchewan;

Dr. J. G. Rutherford, Dept. Natural Resources, C.P.R., Calgary;

Dr. O. D. Skelton, Political Economist, Queen's University, Kingston;

James D. McGregor, well-known stockman, Brandon;

W. A. Wilson, Dairy Commissioner, Saskatchewan, Secretary.

The instructions given to the Commissioners are:—"To be our Commissioners to examine into and report upon all matters connected with the handling, marketing and disposal of the live stock and live stock products of Saskatchewan and to recommend such action as may be deemed practicable for the improvement of such adverse conditions as may be found to exist."

BRITISH COLUMBIA

GENERAL STATEMENT OF THE OBJECTS AND OF THE WORK EMBRACED IN THE COURSE ON "THE SCIENTIFIC BASIS OF AGRICULTURE"

BY L. S. KLINCK, M.S.A., DEAN, COLLEGE OF AGRICULTURE, UNIVERSITY OF BRITISH COLUMBIA

THE graduates of our agricultural colleges are not the only source to which we must look for direction and leadership in our attempt to improve rural conditions in Canada. Other faculties in our colleges and universities are graduating much larger numbers of students than are our faculties of agriculture. Many of these graduates become teachers in our public or in our high schools; and the success which has attended the summer courses in rural science offered by our agricultural colleges, or by our Provincial Departments of Education bears witness to the fact that the teachers are not only desirous of

acquainting themselves with the basic principles underlying agriculture, but are keenly alive to the necessity of acquiring an intelligent understanding of the larger problems of rural life.

Since there is an increasing demand for instruction of this character, not only from teachers but also from other graduates whose professional work brings them into more or less direct contact with the rural population, it would appear advisable to offer such a course at a time when it would most adequately meet the student's need, namely, just before graduation.

With this object in view, the Uni-

versity of British Columbia is offering this year as an elective to junior and senior students in arts, a course on "The Scientific Basis of Agriculture." This course has not been designed to give advanced instruction in the sciences upon which approved agricultural practices are based; but definite application of the scientific principles underlying these practices is made in the discussion of the practices themselves.

While a thorough grounding in the sciences in their relation to agriculture is essential to the agricultural graduate, it is not so necessary to the student who elects arts, theology or medicine. With him, it is important that he know enough about the subject to enable him to discuss it intelligently; but it is of even greater importance that he regard agriculture as a calling offering ample scope for a man with university training. Before he can do this he must have a sympathetic understanding of the larger aspects of the rural problem.

As many of these problems are, in the last analysis, human problems, it was felt that some time should be devoted in this course to a consideration of the most pressing of these questions, which are receiving the attention of governments and of educators at the present time.

In order to accomplish this two-fold object, the course has been divided into two main divisions: The first embraces a study of the evolution of agricultural practices in relation to tillage, crops and livestock, and the contributions made by science in this development are discussed in connection with the advances in the practices noted.

The second division deals with subjects which are the natural outgrowths of the first. It embraces a consideration of economic, social and educational problems in relation to country life, with a discussion of the movements now under way looking to their solution.

INSTITUTE MEETINGS AND SHORT COURSES

THE Superintendent of Farmers' Institutes and Deputy Minister of Agriculture, Mr. W. E. Scott, has issued two circulars relative to arrangements for Farmers' Institute meetings and short courses, for which the provincial Department of Agriculture undertakes to supply not more than two demonstrators or lecturers in each case. Applications for such services have to be in by December 31st. Efforts are to be made to secure competent men for

the subjects named by the Institutes, but if that is found impossible the Department reserves the right to change the subjects. The meetings are to commence in February, 1916. Two short courses, each of two days, will be held in every Institute district where an attendance at each session of not fewer than thirty people can be guaranteed. If desired the courses will be extended. The short courses will be combined with the regular Institute meetings.

FRUIT-PACKING SCHOOLS

THE provincial Department of Agriculture proposes during the coming winter to repeat the system of fruit-packing schools

held last year. While the supply of packers was nearly equal to the demand in 1914, there was a decided shortage in many districts this year,

owing to enlistments for active service. It is hoped that the deficiency will be met by the schools. As previously, the local administration of the schools will be placed in the hands of a responsible body such as the Farmers' Institute, the Fruit Growers' Association, or the Board of Trade, who will be required to guarantee not fewer than twelve pupils, but not more than fifteen, at a fee of two dollars to take the twelve lessons of two and a half hours each, the school extending over the week. Where twenty-four to thirty pupils can be secured a double packing school will be arranged. In districts where twelve pupils cannot be obtained, a three-day school can be arranged with a minimum of eight at a fee of one dollar to take six lessons of two and a half hours each. The Department provides the in-

structor and pays all legitimate expenses except for secretarial work, the rent of the hall and heating and lighting. Local fruit will be used where possible and the responsible organization is requested to reserve $2\frac{1}{2}$ to 3 boxes of fruit for each pupil. In addition to the packing work, modern methods and equipment for packing, and the Fruit Marks' Act will be studied. Pupils who score 75 per cent in the school, and put up a creditable pack for the department prizes, will receive a diploma. Pupils will be required to take up commercial fruit packing in the ensuing season, to be connected with an orchard wherein their services are intended to be utilized as packers, overseers or inspectors, or they are fruit growers or shippers whose experience will be of benefit to the districts in which they reside.

PRUNING SCHOOLS

In 1914, the first year pruning schools were held, there were 25. In 1915 the number increased to 47. They are to be repeated in 1916. The provincial Department of Agriculture will provide and pay the expenses of an instructor. The local administration will be placed in the hands of a responsible body, such as the Farmers' Institute, the Fruit Growers' Association, or the Board of Trade, who will be required to guarantee not fewer than eight pupils nor more than twelve, at a fee of one dollar, to take ten lessons of three hours extending over five days each. Pupils will have to be connected with an orchard where they will work as

pruners or foremen, or a man whose experience will be of benefit to the district of which he is a permanent resident. Where sixteen to twenty-four pupils can be guaranteed two schools will be arranged. The local organization must provide an orchard, or orchards, for the pruning lessons and a hall or room for lectures on the theory of pruning, talks on pruning as relating to the formation of fruit buds, to plant growth and to top-grafting. Pupils are required to bring a pair of pruning shears, a saw and a pocket whetstone. A pruning pole and a light ladder are also necessary for large trees.

There is a something in the pleasures of the country that reaches much beyond the gratification of the eye—a something that invigorates the mind, that erects its hopes, that allays its perturbations, that mellows its affections; and it will generally be found that our happiest schemes and wisest resolutions are formed under the mild influence of a country scene, and the soft obscurities of rural retirement.—*Roberts*.

PART III

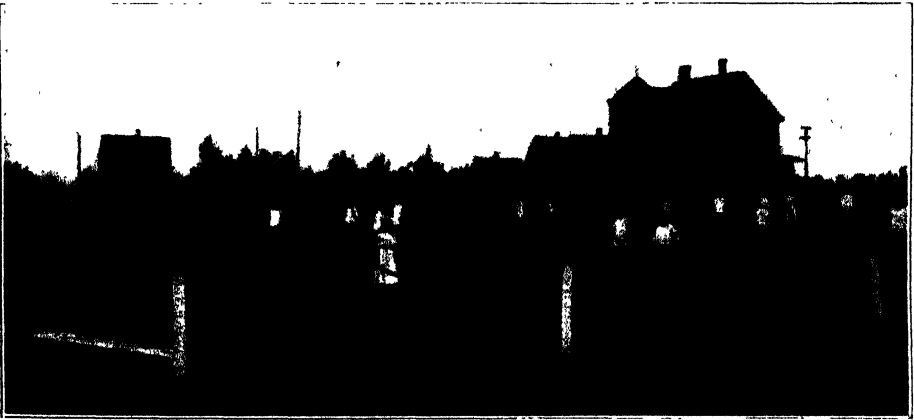
Rural Science

THE PRACTICAL TEACHING OF CIVICS

BY A. KENNEDY, M.A., INSPECTOR OF SCHOOLS, WEYBURN, SASK.

THE School Garden at Souris school, Weyburn, will rank as one of the best school gardens operated in America during 1914. Under the direction of the Principal, Mr. Stanley Phillips, a considerable plot of ground was ploughed in the spring of 1914 and afterwards fenced. At that time pupils of Grades one to five only were accommodated in the four

by the whole municipality and six councillors each elected by a division). Each section or square mile was represented by a plot six feet square. The roads were represented by paths two and three feet wide, those running North and South being six feet apart, while those running East and West were twelve feet apart, thus actually representing the survey of the



SCHOOL GARDENERS OF WEYBURN SCHOOL, SASKATCHEWAN

class-rooms of this school. Under supervision of the teachers, these pupils surveyed the garden as a rural municipality. (In Saskatchewan a rural municipality is eighteen miles square, including nine townships, and is governed by a municipal council, including a reeve elected

roads in the province. Each senior pupil fyled on and had charge of a double section, twelve feet by six feet, while each junior pupil fyled on and had charge of a section six feet square.

Implements and seeds were purchased by the Board for the use

of the pupils, who were given considerable freedom in the matter of choice of vegetable and flower seeds and the arrangement of the individual plots. A portion of the garden was planted with trees, while another portion was planted with some seven hundred shrubs presented by the Provincial Landscape Architect. Along one side of the garden a community farm was operated, being planted with several kinds of grain and the larger vegetables.

Not the least interesting and valuable feature is to be found in the fact that the garden was managed by a municipal council, elected by and from the pupils in the school. This council included a reeve twelve years old and six councillors, one of whom was a girl. Valuable lessons in Civics, Geography, Arithmetic, Language, Drawing, etc., were all made more interesting and vital by reason of the garden, while Nature Study and Elementary Agriculture assumed concrete and definite form. The interest not only of the children but also of the parents was sustained throughout the season. Many visitors from the city and neighbouring school districts, as well as from other parts of the province, expressed their appreciation of the undertaking. Dr. R. W. Wilson, Principal of the Normal School, Regina, and Hon. Walter Scott, Premier and Minister of Education, were pleased to visit the garden during the summer and manifested considerable interest in the undertaking, particularly in the application to the regular class-work, including a practical teaching of Civics.

Interested citizens provided \$64 for prizes awarded to the children for the best constant care of their plots.

The Council met only as necessity arose and transacted the business in regular fashion. Minutes of two meetings will suffice to indicate the nature of the business.

MINUTES OF COUNCIL IN CHARGE OF SCHOOL GARDEN.

SOURIS SCHOOL, WEYBURN S. D. 512

The Council met in Room 4, at recess, all members being present, Reeve Beischel in the chair.

Kathleen Deans - Ormond Stewart:—That Henry Brown be appointed secretary-treasurer. Carried.

Stewart - Joe Hess:—That the following seed inspectors be appointed, Pearl Luck-singer, Eddie Kyle, Frank Wingert and Geo. Clement. Carried.

Albert Brown - Willis Burnside:—That the teachers of the staff be legal advisors to the Council. Carried.

Neil Gibson - Hess:—That the grant of money from the School Board be accepted, with thanks. Carried.

Burnside - Brown:—That meeting adjourn to meet at the call of the Reeve. Carried.

(Signed) ROY BEISCHEL, Reeve.

(Signed) HENRY BROWN, Secretary.

The second meeting of Council was held in Room 4, at recess, all members and officers being present, Reeve Beischel in the chair.

Stewart - Doane:—That Blue and White be adopted as the school colours, and that the School Board be requested to have the posts of the new fence surrounding the school garden painted in these colours. Carried.

A communication was read from Inspector Kennedy re prizes for the plots showing the best constant care during the season, together with a list of sixteen subscribers to a fund of \$64.00 for this purpose and recommending that Dr. R. M. Mitchell, M.L.A., chairman of the Board, Mr. P. E. Netheral, chairman of the Property Committee and Mr. J. Marshall, M.A., Principal of the High School, act as judges in this competition.

Brown - Burnside:—That this communication be received and filed and that the recommendations be adopted. Carried.

Mesz - Doane:—That the weed inspectors be instructed to see that the owners of plots proceed with the weeding of the plots and adjoining paths. Carried.

Gibson - Mesz:—That all strings be lifted and corner stakes firmly driven. Carried.

Doane - Stewart:—That the secretary procure and post a sign bearing "VISITORS WELCOME." Carried.

Burnside - Brown:—That meeting adjourn to meet at the call of the Reeve. Carried.

(Signed) ROY BEISCHEL, Reeve.

(Signed) HENRY BROWN, Secretary.

QU'APPELE SCHOOL GARDEN

QU'APPELE High School had a successful students' parliament, which centred itself upon the cultivation and management of the school flower and vegetable gardens. The parliament having five constituencies, divided the available land into five parts, each of which was divided into 12 lots. One of the lots was reserved for experiments in corn and potatoes. Each pupil was responsible for his special plot. Each grade had a choice of flowers and vegetables. Grade I for instance, seeded turnips, and Grade II beets and sweet peas. The intermediate classes had a choice of three from four varieties. Grade VIII cultivated tomatoes, cabbages and dahlias. The members of the parliament were given the privilege of plots in their own constituency row. The plots not taken were subdivided and given to the care of the higher public school grades. The parliament had its cabinet with a premier and various officers of state. The premier on the advice of his colleagues appointed judges who reported every two weeks. Score cards were provided on which 30 marks were allowed for general appearance, 15 for condition of cultivation, 30 for absence of weeds and 15 for abundance of growth. By this method constant attention was ensured. At the close of the school term the Minister of Agriculture advertised

for tenders for the care of the entire garden during the holiday months at a small salary. Several applicants appeared and being put in control were instructed to sell the lettuce and radishes, the proceeds being added to the school funds. Rain in the latter part of May brought the gardens along finely, but frost in June played havoc with the beans, corn and tomatoes, which, however, were resown and came along finely. Drought retarded the growth later on, but on the whole, according to Miss Virginia Longpre, the Secretary of State, from whose report these notes are taken, the garden was a success, and proved helpful in the study of agricultural and nature subjects.

Miss Thelma Craig, the Minister of Finance, submitted to the house the following statement for the year:

RECEIPTS

Departmental grant	\$20 00
Sale of radishes	1 25
School garden sale	5 45
Proposed grant from trustee board	5 00
	<hr/>
	\$31 70

EXPENDITURES

Weeding	\$ 5 25
Selling of radishes	50
Advertising exhibit	2 00
One hundred copies of Progress	5 00
Prizes for vegetables	7 45
Constituency prize	11.50
	<hr/>
	\$31 70

He that enlarges his curiosity after the works of nature, demonstrably multiplies the inlets to happiness; therefore we should cherish ardour in the pursuit of useful knowledge, and remember that a blighted spring makes a barren year, and that the vernal flowers, however beautiful and gay, are only intended by nature as preparatives to autumnal fruits.- *Johnson*.

PART IV

Special Contributions, Reports of Agricultural Organizations, Notes and Publications

CANADA'S 1915 GRAIN CROP

THE Canadian Pacific Railway Bulletin for November gives the following estimates of the total yields of grains in the Prairie Provinces, and quotes a number of record breaking yields on individual farms.

GRAIN CROP	Number of Bushels, 1915	Acres Under Cultivation	Average Number of Bushels
Wheat.. . . .	336,258,000	12,986,400	25 89
Oats...	481,035,000	11,365,000	42 33
Barley.. . . .	50,868,000	1,509,350	33 70
Rye	2,478,500	112,300	22 07
Flaxseed	12,604,700	1,009,600	12 48

The above estimated number of bushels of wheat is more than double or 108 per cent greater than last year's yields of 161,280,000 bushels, 45 per cent greater than the previous highest yield of 231,717,000 bushels in 1913 and 72 per cent greater than the annual average yield for the five years 1910 to 1914. In acreage, average yield per acre and in total yield the present estimate is the highest on record for Canada. The yield of oats also establishes records.

INDIVIDUAL YIELDS OF WHEAT

	Number of Acres	Variety	Average Yield per Acre of Bushels
Keoma, Alta	20	Marquis	70
	42	"	59
	20	"	70
	10	"	63
Retlaw, Alta	80		48
	75		43
	70		40
Nobleford, Alta.	63		49, 40 lb.
Vulcan, Alta	140		53 ½
	60		60 ½
	75		45
Raymond, Alta	40		52
Warner, Alta	300		47
Milk River, Alta.	20		62 ½
Lethbridge, Alta.	3		81 ½
	43		53 ½
	3		70, 10 lb.
Brooks, Alta	900		40
Wainwright, Alta.	50	Red Fife	62
	10	"	68
Kindersley, Sask.	10		54
Shaunavon, Sask	204		47

Other authenticated yields are as follows:

At Lethbridge, Alta., 150 acres yielded 15,528 bushels of oats, an average of over 103 bushels an acre—one third of this crop was from spring breaking and the remainder was broken in the summer of 1914.

At Grassy Lake, Alta., the big wheat crop yields reported are—50 bushels an

acre from 56 acres; 9,000 bushels from 260 acres; 10,000 bushels from 300 acres; 5,100 bushels from 130 acres; 5,100 bushels from 100 acres—and a field of oats gave 100 bushels to the acre. Farmers find they have each from 500 to 2,000 bushels of wheat in excess of their most favorable expectations before harvest. Report of Crop on the farm of D. E. Johnston, Sovereign, Saskatchewan.

51	acres wheat on summerfallow	57.43	bushels per acre
78½	" " " "	62.48	" "
34	" " " "	69.87	" "
95	" " seeded on flax stubble	55.83	" "
128	" " seeded on wheat stubble	48.09	" "
130	" " of fall ploughing and wheat stubble	40.04	" "
71	" flax	30.08	" "
25	" barley	69	" "
51	" oats	80	" "

All wheat was the Marquis variety. Average yield of wheat on summerfallow 62.45 bushels per acre. Total crop over 34,000 bushels.

YIELDS ASCERTAINED BY DEPARTMENT OF THE INTERIOR

Immigration Branch,

Dept. of the Interior,

Ottawa, November 20th, 1915.

Editor,

THE AGRICULTURAL GAZETTE,

Attached is a list of some remarkable yields that have been reported by the officers of the Irrigation Branch of the Department of the Interior in Southern

Alberta during the past season. I cannot say that these yields have all been personally investigated by any of our engineers, but it is reasonably certain that they are authentic or they would not have been reported.

Some remarkable yields of alfalfa have also been reported. Many new fields were sown during 1915, one of these has given a remarkable yield. The alfalfa was sown on May 26th and cut on August 30th. Our engineer personally weighed 1-6 of the crop from this field and it gave at the rate of 1½ tons per acre.

Yours truly,

E. F. DRAKE.

YIELD OF CEREALS OBTAINED IN SOUTHERN ALBERTA DURING 1915

DISTRICT	Farmer	Yield in Bushels	Acres	Remarks
Magrath...	Bert Ackeberg	66	Wheat	No. 1 throughout
Raymond...	Neil Christenson	55	"	70 lb. per bus.
	Joseph Hancock	53	"	
Warner	Leffingwell & Egan	47	"	300 ½ partly hailed
Monarch	L. H. Mitchell	48	"	Summer-fallowed
	do	44	"	Breaking
	do	34	"	Fall-ploughed
	B. Nyhof	54	"	
	W. Nyhof	50	"	80
Burdett...	Gideon Olson	56	"	Entire crop
	Larce Johnson	67	"	17
	Mr. Elford	69 ¼	"	11
Bow Island.....	K. Kendall	61 ½	"	30
	J. M. Dubait	51	"	72
Retlow.....	Axel Davidson	48	"	80
	Max Vogel	40	"	70
	do	105	Oats	7
Barons.....	Aric Versluys	54 ¾	"	160
	Mr. Flink	70	"	8
	do	85-120	"	Weighed at elevator, measured land
	do	60-85	Barley	

DISTRICT	Farmer	Yield in Bushels		Acres	Remarks
Bassano Colony . . .	R. S. Comar	69	Wheat	5	Fall irrigated after potatoes
		55	"	55	
	Mr. Robson	100	Oats	40	Fall irrigated
Macleod	Mr. Parrot	51	Wheat	26	
	James Beattie	69 ½	"	28	By weight
	George P. Porter	50	"	56	
	Gus Schmidt	50	"	100	
	do	100	Oats	95	
Grassy Lake	Ed. Johnson	95	"	130	
	Walter Givilliam	39 ⅓	Wheat	100	
	Hart Bros.	51	"		
Sherburn					

VACANT LOT GARDENING

HAMILTON, ONTARIO

BY S. H. KENT, CITY CLERK

THE Garden Club of the city of Hamilton for the year 1915 has been a decided success. We had two hundred and twenty-five members and with one exception they diligently cultivated their lots with the result that their families are amply provided with potatoes and other vegetables for the coming winter and in many cases they have sold what they did not require for their own use. One instance came to my notice where one of our members with a garden 40 feet x 160 feet dug six baskets of potatoes to the row, and sold them for thirty cents per basket. One little fellow twelve years of age was given \$5 as a prize by one of our citizens for the first basket of potatoes grown by a boy under fourteen years of age.

We estimate that more than 5000 bags of potatoes besides large quantities of other vegetables have been grown by the members of the club.

If the weather had been more favourable the result would have been still better but we have every reason to be well satisfied with our first venture in vacant lot cultivation.

Our plan was as follows:—

The city council appointed a committee of management consisting of seven members with power to act.

The public park board placed at the disposal of the committee one of its parks that had not been improved. This park was laid out into 125 garden lots, each 40 feet x 160 feet. The owners of many vacant lots throughout the city also placed lots at the disposal of the committee, from which suitable selections were made.

Having secured the land the committee engaged men to plough and prepare it for planting. The lots were then assigned to members of the club as convenient to their homes as practicable. Potatoes for seed were purchased by the committee and sold to the members of the club at cost. The membership fee was \$1.50. The total cost of preparing the land, advertising and purchasing seed potatoes was \$645.78.

The income of the club from donations by citizens, fees of members and sale of seed potatoes was \$531, leaving a balance of \$114.78 as the total net cost to the city. The splendid result achieved by this small expenditure is certainly very satisfactory.

Our experience teaches us that the best plan is to secure large pieces of suitable land and divide it into garden lots forming a community garden—it creates a friendly rivalry among the members who vie with each other in cultivating and producing the best results; it enables more economical working of the land and secures a measure of protection to the crop, and we think that if obliged to pay a small rental for these pieces of unused land that the advantages gained would more than compensate for the extra cost.

We are greatly encouraged with the results of the experiment. It has been the means of assisting over two hundred families to substantially provide for the coming winter; it has promoted industry among a class otherwise deprived of the opportunity of having a garden of their own; it will have the effect of relieving the claims on the public charity fund; it encourages thrift and is an education in land production of great value

to the persons directly interested, as well as an advantage to the community. This is a work that deserves the encouragement of municipal councils for its economic as well as its educational advantages, and plans should be made during the winter for early

spring work. While the necessity for production was manifest this year, the obligation will be even greater next year and any movement having as its object greater production from the land will prove a practical service to the Empire.

OTTAWA, ONTARIO

BY W. T. MACOUN, DOMINION HORTICULTURIST

THE vacant lot gardens in the City of Ottawa, described in the June number of THE AGRICULTURAL GAZETTE, were, on the whole, highly satisfactory. The enterprise consisted of 128 plots, fifty by one hundred feet, for which no less than 180 applications were received. No charge was made for the plots. The gardeners supplied their own tools and seeds. In order to have as few failures as possible those having the plots were given until May 25th in which to begin work. If no work was done on a plot by that time it was given to someone else. In this way a number of the plots changed hands. Another time limit was given to June 15th, by which time at least two-thirds of the plot must have been planted. Again a number of plots changed hands, as several failed to do the necessary amount of work or showed a lack of interest. As a result of this weeding-out process there were not more than twenty out of the one hundred and twenty-eight who did not do fair to good work on their plots. There was great enthusiasm shown by the majority of the gardeners during the summer. It was no unusual sight to see one hundred persons busy at their gardens on a summer's evening. The season was favourable for most crops and in consequence the results, as a whole, were very satisfactory.

A "Patriotic Vegetable Garden Competition" was held in connection with these plots, the gardens being judged in June, July, and August by Mr. M. B. Davis, of the Experimental Farm Staff, the score of points used being

General Appearance Considering:—	
(1) Method of Planting	10
(2) Arrangement	10
(3) Uniformity of stand and growth	10
(4) Vigour and freedom from injuries	10
	40
Quantity and value of vegetables	20
Assortment of vegetables	20
Cleanness and neatness	20
	—
Total	100

Another year 15 points would be given for vigor and 15 points for cleanness and neatness.

Two series of prizes were given, consisting of one series of four prizes for the best plot of mixed vegetables, the prizes being one thousand feet of lumber, one ton of coal, and two five dollar prizes; and another series of three prizes for the best plots of potatoes, the prizes being ten dollars, and two five dollar prizes. The presentation of prizes was made in the Sunday School Hall of St. Andrew's Church, 72 of the gardeners and members of their families being present. Many of these expressed their gratitude to the Church for giving them the opportunity of working the plots, a long list of names being attached to an appreciative letter addressed to the committee in charge. A number of persons told what they had grown on their plots, the following being some examples:

Plot No. 31—10 bags of potatoes; 300 ears of corn; 1,200 cucumbers and 300 tomatoes.

Plot No. 13—12 bags of potatoes; a liberal supply of corn, pumpkins and squash. One squash measured 80 inches around and weighed 125 lbs.

Plot No. 20—9 bags of potatoes, a large crop of tomatoes, cucumbers and beets.

Plot No. 110—Potatoes, 6 bushels; carrots, 1 bushel; turnips 1½ bushels; beets, 2 bushels; cabbage, 36 heads; green beans, 16 gallons; peas, shelled, 10 quarts; onions, 2 gallons; corn, 13 dozen cobs; tomatoes, 314 lb.; ripe, 2 bushels green.

Plot No. 121—For a family of seven, a constant supply of green beans, July 15th to Oct. 1st., potatoes, 6 bags and sufficient carrots, turnips, parsnips onions and cabbage for the summer fall and winter supply.

This autumn a letter was sent to all the gardeners asking if they desired to work the plots next year and a large proportion answered in the affirmative. The plots were then granted for next year in order to give those who obtained them the opportunity of manuring and digging them this autumn, should they care to do so. Those who had not done satisfactory work were not given the plots again, as there is too great a demand for them by those eager to do the work. Next year little will be spent by the Church on these

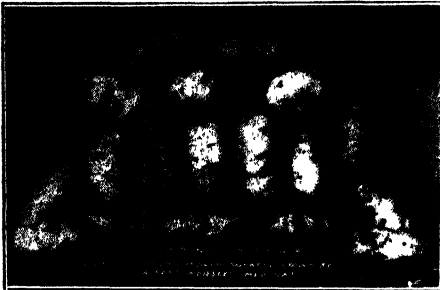
plots, other than keeping the roads in good condition, those having the plots being expected to prepare the soil themselves, which most of them desire to do.

The Church Committee in charge of the above work consisted of Mr. W. T. Macoun, Dr. Jas. W. Robertson and Mr. Gilbert Allan, Secretary.

MEDICINE HAT, ALBERTA

BY S. E. MCLELLAN, SECRETARY, VACANT LOT GARDEN CLUB

WHILE only 78 lots were registered in the books of the Vacant Lot Garden club, as being cultivated, there were perhaps five or six times that many which were actually cultivated, and most of these were the direct or indirect result of the Vacant Lot garden movement.



IRISH COBBLER POTATOES
Grown at Medicine Hat, Alberta

Never before in the history of the city has there been such an abundance of vegetables, and never before has the cost of living been so low. For the first time Medicine Hat has exported potatoes. Previously a great many carloads of potatoes have been brought in, but this year several carloads have been shipped out, and there are more to follow.

In a trip around the city the difference in the gardens of this year as compared to other years was strikingly noticeable. Nearly everybody had a garden of some kind—vegetables or flowers or both—but

potatoes were the big crop, and some splendid results were obtained in yield and size of growth.

A great deal of experimenting was indulged in, such as growing two crops on the same land. One man grew a crop of potatoes, sold them for \$1.50 per bushel, and then planted peas, beets and cucumbers and grew a marketable crop of these. Another man grew radishes from seed, let some of them go to seed, sowed this seed and grew another crop of radishes. A good deal of corn was successfully grown.

The city council gave a small grant towards the Vacant Lot club, enough to cover the organization expenses. They also gave a low rate on water, and besides, set aside \$500 for the purpose of making water connections with vacant lots where necessary. The club membership was \$1.00, and this entitled a member to having any 25 foot lot ploughed and harrowed and made ready for planting. Each additional lot cost \$1.00 and while the club prepared a considerable number of lots for actual members they were also able to give out much information and facilitate operations on other lots where the gardeners did not choose to become members.

A great deal of garden truck was grown on acreage, and many who entered in this way got their inspiration from the Vacant Lot Garden club campaign in the local papers, and distribution of literature, so that while the club as such was not in itself an unqualified success, it was a success in that it created a sentiment in favour of gardening which produced wonderfully gratifying results.

CALGARY, ALBERTA

THE second year of the Calgary Vacant Lots Garden club proved a great advance upon the first. In 1914 the membership was 173. In 1915 it is 450, an increase of 277, or over 160 per cent. Last year the total number of lots under cultivation was 243; this year it was 976, an increase of 733, or a fraction over 300 per cent. This would represent about 100 acres devoted to vegetables that were brought directly under control of the club. In his report among other things

the Secretary-Treasurer, Mr. H. G. Burrows, says: "Through the kindness of the many lot owners who loaned us the use of their property we were enabled to give a family the use of one or two 25 ft. lots, rent free, right in the neighbourhood and some times opposite the home. Last year our efforts were confined principally to the city centre, this year we have had lots under cultivation throughout the city. Perhaps we would be well within the limit in saying twice the amount cultivated by

the club was sown in vegetables by private owners and others directly or indirectly through our influence."

INSTRUCTIONS AND SUGGESTIONS

In the early part of the year meetings were held at which instructions and suggestions were given to the lot holders and intending holders. The secretary proposes if the funds are forthcoming to prepare a booklet setting forth the principles of gardening, and conveying clear and concise instruction on soil preparation, the selection of seeds and plants and methods of cultivation. A deal of correspondence has been carried on with other cities regarding operations in Calgary. A number of plants by the kindness of local florists and others were distributed free. Twenty-two prizes spread over five classes were awarded. Over a hundred entries were received in competition and the rivalry was very keen, especially in vegetable gardens and vegetable gardens with flower ornamentation. A horticultural exhibition was held in Calgary August 19, 20 and 21, at which the Vacant Lots Garden club achieved great success.

Special efforts were devoted to the growing of potatoes. In this direction the secretary says: "To attempt to hold a potato show in Calgary, where potato growing was looked upon with suspicion and regarded by some as an impossibility was by no means a small undertaking. For a first show an excellent display was made, over 130 entries being staged. Of the 45 prizes offered, no fewer than 35 were won by members of the club with potatoes grown in vacant lot gardens."

The Calgary city council consented to advance a thousand dollars to the club, but only \$250 of that amount was received. However accounts for lots ploughed by the parks' department and for a supply of seed potatoes brought the amount to \$583.

A MONEY-MAKER

In concluding his report of the year's operations the secretary says: "The purpose of our club is to afford every man or head of a family the opportunity to cultivate a plot of ground to supply the needs of his own family. We cannot begin to estimate the value of this work to the community. Every family in this city has been benefited directly or indirectly through the work of this organization and what has been accomplished cannot be weighed by dollars and cents.

"I have heard it said that the Vacant Lots Garden club is a money making concern. That is perfectly true. Not perhaps in the sense in which the remark was made, but in the truest and fullest sense of the word it is the greatest money-making

concern in Calgary or the West today. It gives the greatest return on the smallest investment.

"We are going to give every citizen the opportunity of participating in this undertaking in future. We are planning to enlarge our work. There is a large field of usefulness before us, but to accomplish this we will need cooperation and practical support."

THE POTATO SHOW

The potato show referred to in the foregoing was held under the joint auspices of the Horticultural Society, the Vacant Lots Garden club and the Consumers' League. The various exhibits were judged according to a per-centage scale, 20 points being allowed for grading, 20 for quality and freedom from disease, 20 for shape and appearance, 20 for harvesting and 20 for cooking qualities. There were all kinds of potatoes shown, good, bad and indifferent, cooked and uncooked, in their skins and out of their jackets. It was held that the general excellence of the show proved beyond doubt that potatoes as good as any in the world can be grown in Calgary. As Secretary Burrows of the Horticultural Society said, the exhibits demonstrated the suitability of certain varieties and the right methods of culture on the one side and, on the other, the bad results of a lack of knowledge and of using undesirable seed. An interesting feature was the cooking on the spot by the representatives of the Consumers' League of potatoes which the exhibitors wished to have tested that way. It was stated that one exhibitor had raised Wee McGregors on a scale that would mean 500 bushels to the acre. It is estimated that the city's total crop of potatoes will reach 12,000 bushels, which in the circumstances is little short of phenomenal. Lily White and Irish Cobblers, the latter from seed grown at the Lacombe Experimental Station, were the most favoured sorts.

Extra attractions were demonstrations in boiling, steaming and frying potatoes, in making salads and different dishes, in paring and even in eating potatoes.

CULTIVATION IN SUB-DIVIDED LOTS

At the close of the show a luncheon was held under the auspices of the Consumers' League. Reference was made to the subdivisions around Calgary and a suggestion was put forth by the Mayor that effort should be made to utilize the different lots thus created. Dr. Rutherford, in supporting the idea, urged that an organization under the cooperation and patronage of the city should be formed to give effect to the proposition. Senator Lougheed referred to the pessimism of the past, when it was believed that hardly anything of a

vegetable nature could be grown in Central Alberta, and to the unprecedented production of the present year. The President of the Vacant Lots Garden club, Mr. A. Calhoun, estimated that fifteen per cent of the produce raised in Calgary was grown on the vacant lots. They had produced 5,000 bushels of potatoes alone. This sort of thing helped to regulate prices. He spoke also of the popularity the Alberta potato had gained. It had almost entirely

captured the Calgary market in the last few months. The President of the Horticultural Society, Mr. C. P. McQueen, referred to the fact that apples were now grown in this district, and to the additional fact that the Superintendent of Calgary Parks had cultivated out of doors 50 varieties of roses. He also said that his own wife had taken first prize for raspberries. He predicted great progress in the cultivation of flowers as well as of fruit.

STUDENTS IN AGRICULTURAL AND VETERINARY COLLEGES AND SCHOOLS

NOVA SCOTIA AGRICULTURAL COLLEGE

First and second years 57

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE, QUE.

Students Enrolled

First year 21
Second year 10
Third year 17
Special courses 38

Total 86

OKA AGRICULTURAL INSTITUTE, LA TRAPPE, QUE.

Practical or two-year course, in the two classes 37

Scientific or Four-year course:—

First year 29
Second year 26
Third year 20
Fourth year 7

Total 119

MACDONALD COLLEGE, STE. ANNE DE BELLEVUE, QUE.

School of Agriculture:—

Regular course in Agriculture leading to Associate Diploma:
First year 36
Second year 27
Leading to the degree of B.S.A.:
Third year 23
Fourth year 18
Special students in Agriculture. 1

School for Teachers:—

Model School Class studying for Model School Diploma . . . 141
Elementary Class studying for the Elementary Diploma . . . 49
Kindergarten Class studying for the Kindergarten Diploma . . . 3
Summer School in Nature Study and Elementary Agriculture. . . 87

280

School of Household Science:—

Institution Administration, senior None
Institution Administration, junior 11
Homemakers 35
Autumn Short Course (one of three) 20

66

Total 451

ONTARIO AGRICULTURAL COLLEGE, GUELPH

Course for the Associate Diploma:—

First year 120
Second year 95

Course for the degree of B.S.A.:—

Third year 50
Fourth year 48

Course for the degree of B.Sc. (Agr.):—

Third year 1
Fourth year 1

Special students in Agriculture:—

Third year 1

Normal Course in Manual Training . . . 4

Domestic Science Courses at Macdonald Institute. 125

Total 445

MANITOBA AGRICULTURAL COLLEGE

Agriculture:—

First year 95
Second year 63
Third year diploma 14
Third year degree 27
Fourth year 16
Fifth year 13

Total in Agriculture. 228

Home Economics:—

First year 70
Second year 25
Third year 9

Total in Home Economics. 104

Total 332

COLLEGE OF AGRICULTURE, UNIVERSITY OF
SASKATCHEWAN

	Associate Course	Degree Course	Total
First year.....	75	7	82
Second year.....	20	3	23
Third year.....	10	7	17
Fourth year.....	2	3	5
Affiliated colleges. ....	..	..	10
	107	20	137

AGRICULTURAL SCHOOL, OLDS, ALBERTA

First year.....	boys, 60; girls, 38:	98
Second year.....	boys, 23; girls, 7:	30
Total		128

AGRICULTURAL SCHOOL, CLARESHOLM,
ALBERTA

First year.....	boys, 45; girls, 28:	73
Second year.....	boys, 21; girls, 9:	30
Total		103

AGRICULTURAL SCHOOL, VERMILION,
ALBERTA

First year.....	boys, 18; girls, 11:	29
Second year.....	boys, 14; girls, 3:	17
Total		46

UNIVERSITY OF ALBERTA, EDMONTON

Faculty of Agriculture.....	13
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THE ONTARIO VETERINARY COLLEGE,
TORONTO

	First Year	Second Year	Third Year
Canada.....	50	38	53
Great Britain.....			1
United States.....	7	12	25
B. West Indies.....			2
Newfoundland.....	1		
Totals	58	50	81
Grand total:--	189.		

LAVAL VETERINARY SCHOOL, MONTREAL

First year.....	19
Second year.....	19
Third year.....	20
Total	58

SUMMARY

<i>College or School</i>	<i>Number of Students</i>
Agricultural College, Truro, N.S.	57
School of Agriculture, Ste. Anne de la Pocatière, Que	86
Oka Agricultural Institute, La Trappe, Que..	119
Macdonald College, Que.	451
Ontario Agricultural College, Guelph, Ont	445
Manitoba Agricultural College, Winnipeg, Man	332
College of Agriculture, University of Saskatchewan, Saskatoon	137
Agricultural Schools of Alberta:--	
Olds.....	128
Claresholm.....	103
Vermilion.....	46
Faculty of Agriculture, University of Alberta, Edmonton.	13
Ontario Veterinary College, Toronto	81
Laval Veterinary School, Montreal	58
Total.....	2,056

In addition to this number of regular students in agriculture and veterinary science, there are 27 Arts students taking an elective course in agriculture under Prof. L. S. Klinck, at the University of British Columbia, and 6 students are registered at Queen's University in the course for B.Sc. (Agr.)

TORONTO MUNICIPAL ABATTOIR

THE ONLY ESTABLISHMENT OF THE KIND IN CANADA—EXPERIENCE OF
THE FIRST YEAR

TORONTO is the only city in Canada that boasts a municipal abattoir and it has been in operation but a little over a year. It was talked of for some time before the first stone was laid,

but once having been definitely decided upon it quickly came into existence and on August 4th, 1914, it was opened for business. Its object was of course to protect the public against diseased meat

and to give local butchers an opportunity to conduct their business under as nearly as possible perfectly hygienic conditions. While the first year has hardly been the comprehensive success that was hoped for, that is in general adoption by the butchers, it has undoubtedly accomplished something material. If only as a model of what the slaughtering of animals should be it is serving its purpose and justifying its existence to a considerable extent. However it has attracted about thirty customers, some of whom rent their own killing, chilling and storing quarters, while others make use of the extensive and complete public facilities that are provided. Some account of the initiative operations, accompanied by illustrations of the interior, was given by the Veterinary Director General in THE AGRICULTURAL GAZETTE for February this year, Vol. II, No. 2.

CLEANLINESS AND SANITATION

The utmost attention is paid to cleanliness and sanitation. Vitrified brick, tiles and concrete are the materials used in the interior, while the drainage methods are the best that modern ingenuity has devised. Apart from this the establishment, being under the inspection of the Health of Animals Branch of the Dominion Department of Agriculture, is a guarantee that it is conducted on hygienic lines. The municipal abattoirs at Glasgow and Edinburgh were accepted as models, although they are on a much larger scale, enjoying practically a monopoly of public business. Not an animal is killed at the Toronto abattoir that has not been officially inspected and passed upon.

THE BUILDINGS

The plant proper consists of two separate buildings connected by a 175 foot bridge and close to the three lines of railway that enter the city. The buildings are of steel construction with hollow tile floors and partitions. The main structure is the abattoir and comprises two floors, the cold storage and offices being below and the killing beds and chill rooms above. This building is 180 feet by 180 feet. The annex or rendering house is 100 feet by 100 feet and has four stories, hides occupying, and being cured in, the basement, fertilizers finding room on the ground floor, the rendering and casing departments on the first floor and the washing and evaporating machine on the second floor, or top story. On the north side of this building are the engine and boiler rooms, 60 feet by 80 feet, both steam and electric power being used. Tracks it should be mentioned, extend in every needed direction. The whole is under the management of Mr. D. W. Wright, a gentleman of wide experience.

DIMENSIONS AND TEMPERATURE

Following are the room sizes, apart from the killing beds, and the temperatures specified to which they are to be cooled:—

		Temperature
3 storage rooms	53 by 34 ft....	30. 35
2 “ “	53 by 17 ft....	30. 35
1 “ “	72 by 34 ft....	15.
1 “ “	72 by 17 ft....	15.
3 freezing	60 by 17 ft....	zero

The height is 12 feet throughout.

There is an ante-room 12 feet wide across the ends of the three freezers so that on entering them the door is not opened directly into the warm outside atmosphere, but into the ante-room. The rooms are cooled by 22,000 feet of 2-inch expansion coils located at the ceiling between the track rails and along the walls. The cooling coils are connected with the refrigerating machines located in the engine room by means of two four-inch liquid feed main. There are 9 chill rooms each 70 feet by 10 feet and 21 feet 6 inches high, kept at a temperature of 32, just enough to remove the heat from the meat which is taken in direct from the killing beds which are directly opposite. These apartments are all ventilated so that vapors from the meat are completely carried away. When the meat leaves the chill rooms it is conveyed along the tracks to the end of the building and down a conveyor to the loading platform outside on the ground floor level. It is hardly necessary to say that everything is weighed, carefully noted and kept account of.

KILLING AND CHILLING

The killing beds and chill rooms have a daily capacity of 300 head of cattle, 300 sheep, 300 calves and 300 hogs. The slaughtering floor is very bright, there being a skylight over the hallway extending the full length. The exterior walls of the chill rooms are finished with white glazed brick, reflecting the light above and giving that side a splendidly clean appearance. A system of overhead tracks expedites the handling of carcasses, these tracks run along over each bed and along both sides of the hallway, connecting with each chill room and over the bridge with the rendering house.

THE RENDERING PROCESS

In the rendering or by-product house, a building entirely separated from the abattoir, the equipment of the fertilizer department on the ground floor consists of two 300 ton hydraulic presses and two large steam-drying machines. In the rendering section on the first floor are located ten rendering tanks 10 feet by 10 feet suspended on steel beams. Ten slush vats are installed for reloading the tanks,

also five large grease receivers. At the other side of this floor is the casing department, where casings are cleaned and prepared. In connection with this process there is installed in the engine room a railway type steam-driven air compressor, the air being piped here for inflating the casings mechanically. Other equipment in the casing department includes a double effect evaporator and a vacuum pump. A five horse power electric motor drives the machines installed in this section.

On the second or top floor the fat and bones are treated, the fat being turned into grease for soap, etc., and the bones boiled, cleaned and dried. The equipment on this floor consists of washing machines for treating the fat previous to the rendering process. For treating the bones there are two bone washers, one bone saw, one hoof puller and two bone-boiling tanks, also racks for drying and bleaching. The machinery is operated by a ten horse power motor. At the east end of this building is an elevator with a capacity of 3,200 pounds and driven by an eight horse power electric motor.

NEARLY SELF-SUPPORTING

All the killing is done by hand except in the case of hogs, which are slain both by machinery and by hand. Nothing is wasted, all the by-products being cleaned

or reduced and put to some use and realized upon to such an extent that it is fully expected the time is not far distant, when, with the fees, the abattoir will be self-supporting. When the killing is done by the city butchers 75 cents per head is charged for cattle, 20 cents for calves, 25 cents for hogs and 15 cents for sheep and lambs. When the conveniences are rented the charges are 40 cents per head for cattle, 12½ cents for calves, 15 cents for hogs and 10 cents for sheep and lambs. Besides the abattoir processes the city does a general cold storage and freezing business in connection therewith. Three veterinary inspectors and one lay inspector are connected with the establishment. The importance of inspection is proven by an incident that occurred recently. Five cattle were brought in. Four were passed as sound. The fifth suffered from an abscess, the poison from which permeated the whole system. The owner pleaded to be allowed to cut out the visibly diseased part and to retain the rest. The inspector refused because, as he said, from head to tail the animal was infected.

As has been said Toronto's municipal abattoir is but a little over a year old. In the last five months of last year 30,346 animals were slaughtered and prepared for market. In nine months and a half of this year 47,179 animals were killed and treated and the heaviest months were to come.

THE AGRICULTURAL SCHOOL IN ALBERTA

IN an article, in the Christmas number of *The Canadian Countryman*, on Olds and the agricultural school at Olds, Alberta, Dr. C. C. James, Commissioner of Agriculture, says:—

"The boys come from the farms of the province. They are 16 years of age up to 25 years. Many have not been at school for years, but they are in earnest, anxious to make up for lost opportunities. At the school they get instruction in English and in the work of a regular public school. In addition, they have laboratory instruction in the sciences underlying farming, and practical instruction in soil cultivation, production and handling of crops, and raising and care of live stock. At the same time, they are living right in the midst of first-class farm operations. There are no fees, and the sole cost is for transportation and board. The students live in the homes of the village, close by the school.

When the student finishes his two years' course, what then? Well, he can remain on his farm with mental equipment that must mean a great deal to him in both efficiency and pleasure, or he can go up to Edmonton and take another year or two years, or

three years at the College of Agriculture under Dean Howes.

And the cost? Such a school will cost about \$25,000, and with farm attached and all necessary buildings and full equipment will cost about \$100,000. The annual maintenance will be about \$10,000. A lot of money, you say. About the best investment and the most economical expenditure that could be made. We have spent money lavishly on railroads and public buildings, but we have, as a people, never yet realized the far greater importance of a rational rural education. If the Province of Ontario could put a school of this kind in every county, with farm attached, it might mean a capital investment of three or four million dollars, and an annual outlay of four or five hundred thousand dollars. Would an investment of one million dollars in agricultural schools be too much for the province of Ontario to undertake?

When we read what Minnesota and some other States have done for the farmers' boys and girls we are inclined to ask ourselves some serious questions. The boys and girls of the farm are the greatest undeveloped asset of the province of Ontario.

SOCIETIES AND ASSOCIATIONS

ANNUAL MEETINGS AND FAIRS

The annual meetings of the following associations will be held in Toronto:—

- Clydesdale Horse Association of Canada:—J. W. Wheaton, 181 Simcoe St., E., Toronto, Ont., February 1st, 1916.
 Canadian Shire Horse Association:—G de W. Green, 58 Grenville St., Toronto, Ont., February 3rd, 1916.
 Canadian Hackney Horse Society:—H. M. Robinson, 883 Broadview Ave., Toronto, Ont., January 31st, 1916.
 Canadian Standard Bred Horse Society:—Jno. W. Brant, Ottawa, Ont., February 1st, 1916.
 Canadian Thoroughbred Horse Society:—Thos. J. Macabe, Toronto, Ont., January 31st, 1916.
 Canadian Pony Society:—G. de W. Green, 9 Toronto St., Toronto, Ont., February 2nd, 1916.
 Dominion Shorthorn Breeders' Association, Toronto, Ontario:—Secretary, H. M. Pettit, Freeman, Ont.; February 1st, 1915.
 Canadian Ayrshire Breeders' Association:—W. F. Stephen, Huntingdon, Que., February 2nd, 1916.
 Canadian Hereford Breeders' Association:—Jno. W. Brant, February 2nd, 1916.
 Canadian Jersey Cattle Club:—B. A. Bull, Brampton, Ont., February 1st, 1916.
 Dominion Swine Breeders' Association:—R. W. Wade, Parliament Buildings, Toronto, Ont., February 4th, 1916.
 Dominion Sheep Breeders' Association:—R. W. Wade, February 3rd, 1916.
 Canadian and International Good Roads Congress:—Geo. A. McNamee, Sohmer Park, Montreal, Que., March 6th to 10th, 1916.
 North American Galloway Association, Guelph, Ont.:—Secretary, Lieut.-Col. D. McCrae, Guelph, Ont.; December 7th, 1915.

The annual meetings of the executive committees of the live stock associations of Manitoba will be held at Brandon on January 3rd, 4th and 5th, 1916, as follows, Geo. H. Greig, Winnipeg, Secretary:—

- Swine Breeders' Association Tuesday, Jan. 4th.
 Horse Breeders' Association Tuesday, Jan. 4th.
 Cattle Breeders' Association Wednesday, Jan. 5th.
 Sheep Breeders' Association Wednesday, Jan. 5th.
 Joint meetings Monday and Tuesday evenings, Jan. 3rd and 4th
 Joint meeting with Grain Growers . . Wednesday evening, Jan. 5th.

Convention of United Farmers of Alberta, Calgary, Alberta:—Secretary, P. P. Woodbridge, Calgary, January 18th to 21st, 1916.

The Pomological and Fruit Growing Society of the Province of Quebec, Macdonald College, Quebec:—Secretary, Peter Reid, Chateauguay Basin, Que.; December 9th and 10th, 1915.

Ontario Agricultural and Experimental Union, Guelph, Ontario:—Secretary, Prof. C. A. Zavitz, O.A.C., Guelph, Ont.; January 11th and 12th, 1916.

WINTER SHOWS

Ontario Winter Fair, Guelph, Ontario:—Secretary, R. W. Wade, December 3rd to 9th, 1915.

Maritime Winter Fair, Amherst, Nova Scotia:—Secretary, F. L. Fuller, Truro, Nova Scotia; December 6th to 9th, 1915.

Toronto Fat Stock Show, Union Stock Yards, Toronto, Ontario:—Secretary, Andrew Dods, Toronto, Ontario; December 10th to 11th, 1915.

Alberta Winter Fair and Poultry Show, Calgary, Alberta:—Secretary, E. L. Richardson, Calgary, December 14th to 17th, 1915.

Ottawa Winter Fair, Ottawa, Ontario:—Secretary-treasurer, W. D. Jackson, Carp, Ontario; January 18th to 21st, 1916.

Exhibition of the Westmoreland and Pet Stock Association, Moncton, New Brunswick:—Secretary, Geo. H. Seaman, Moncton, New Brunswick; January 11th to 14th, 1916.

PRESERVATION OF BIRD LIFE

There was held early in November a meeting of the Committee of the Commission of Conservation on Fisheries, Game and Fur-bearing Animals in which the question of the protection of migratory birds was taken up and the following resolution passed:—

"WHEREAS, the Committee heartily approve the efforts now being made for the preservation of North American migrating birds, some of which are seriously threatened with extinction, and learns with satisfaction the attitude of the Provincial Governments in this connection, now, therefore, be it

"RESOLVED that the good offices of the Dominion Government be solicited to negotiate a treaty between Great Britain and the United States, for the purpose of securing more effective protection for the birds which pass from one country to the other."

The question of establishing bird sanctuaries in Canada to prevent the extinction of species of certain birds was discussed and it was pointed out that, while this has been almost neglected in Canada, the United States has sixty-five national bird reservations.

THE ONTARIO PROVINCIAL PLOUGHING MATCH

THE Ontario Provincial Ploughing Match was held on the Ontario Agricultural College farm on November 5th. This is the fourth provincial match at which only the prize winners in each class of the branch associations throughout the province were allowed to compete. The rules and regulations for this match were published in the August number of THE AGRICULTURAL GAZETTE on page 769.

There were 33 competitors in the various classes and the attendance of spectators was estimated to be about 3,000 people.

A special feature of this year's match was a farm tractor demonstration in which various forms of traction machines, from the small engine hauling a two furrow plough up to the larger machine turning six furrows, were seen in operation. The classes were as follows: Sod, open to all; Sod, open to those who had never won a first prize in this class prior to 1915; Sod, for boys under eighteen years; Jointer Ploughs in Sod without wheels or shoe or share narrower than 9 inches; Jointer Ploughs in Sod, for boys under seventeen; Stubble, for boys under sixteen; Two-Furrow Ploughs, best team and equipment, besides sweepstake competitions.

THE ONTARIO VEGETABLE GROWERS' ASSOCIATION

The convention of the Ontario Vegetable Growers' Association was held in Toronto on November 9th. There were present about sixty delegates from various parts of the province. A programme consisting of addresses and discussions on various phases of vegetable growing was carried out.

The secretary, J. Lockie Wilson, reported that during the year new branches of the association were organized at the following points: Clinton and Louth, Lincoln and Welland and St. Williams. Reports of branches indicated that the season, on account of excessive moisture, had been unfavourable to the vegetable growing industry. Most of the societies held meetings during the winter. Demonstra-

tions of onion spraying and other work were carried out in a number of localities by Mr. S. C. Johnson, the Ontario vegetable specialist. A number of the societies secured seeds at wholesale rates and some of them purchased supplies of various kinds cooperatively. Field crop competitions among vegetable growers were carried out. In these competitions, tomatoes, celery, onions and early potatoes were used. The five prize winners in the fields in each district were allowed to compete at the Canadian National, the Central Canada Exhibitions and the Western Fair, which resulted in magnificent displays. The annual business meeting of the association will take place at a later date.

THE ONTARIO HORTICULTURAL ASSOCIATION

THE tenth annual meeting of the Ontario Horticultural Association was held in Toronto on November 10th and 11th. There were in attendance one hundred and thirty-nine delegates repre-

senting thirty-nine societies. The Superintendent reported that during the year seven new societies were organized situated at Cayuga, Chatham, Dundas, Essex, Milton, Port Credit, Richmond Hill. Two

societies, Caledonia and Paisley, were discontinued. There are now seventy-nine societies with a membership of about fourteen thousand.

Reports of many of the societies were presented at the meeting. These show that the work varied greatly throughout the province. Most of the societies held flower shows during the year and a number of them, garden competitions. Nearly all of the societies distributed seeds, plants and bulbs to members as premiums with membership. A number reported having secured flower seeds in bulk lots and of having them divided into small packages which they were able to sell to school children at about one cent each. A number of societies planted and kept in order beds of flowers, more particularly near public buildings. Vacant lots were also cleaned up and planted in a number of cases. In some cases trees were planted and other work done to improve the general appearance of the towns and villages. Propaganda was inaugurated at a number of points for the use of vacant lots for the growing of vegetables by needy families. School gardening was also encouraged. A committee consisting of J. Lockie Wilson, Supt. of Societies, Dr. F. E. Bennett and W. B. Burgoyne was appointed to arrange for an excursion, either or both to Rochester, or Ottawa, during the month of May or June, to give members an opportunity to see the different plants in bloom.

An interesting programme of addresses and discussions was carried out. Among the resolutions passed was the following:

"That whereas having regard to the desirability of having legislation in Ontario to enable cities, towns and municipi-

palities to prepare town planning schemes in order to secure the improved layout of towns, more spacious surroundings to buildings and healthier conditions of home life, we, the Ontario Horticultural Association in annual convention assembled, resolve to petition the Legislature of the Province to consider the desirability of passing a Town Planning Act, and that a copy of this resolution be sent to the Premier and the Provincial Secretary of Ontario."

ELECTION OF OFFICERS

President—Rev. G. W. Tebbs, Hamilton.
1st. Vice-President—Dr. F. E. Bennett, St. Thomas.
2nd. Vice-President—Prof. J. W. Crow, O.A.C., Guelph.
Secretary and Editor—J. Lockie Wilson, Toronto.
Treasurer—C. A. Hesson, St. Catharines.

Directors

District No. 1—Rev. A. H. Scott, Perth.
" " 2—H. J. Clark, Belleville.
" " 3—R. Whorley, Haileybury.
" " 4—T. D. Dockray, Toronto.
" " 5—Jas. Ogilvie, Hamilton.
" " 6—Wm. Hartry, Seaford.
" " 7—R. W. Brooks, Brantford.
" " 8—Dr. J. A. Bothwell, Stratford.
" " 9—W. E. Gignac, Sandwich.

Honorary Director—J. H. Bennett, Barrie.
Representatives to American Civic Association—Rev. A. H. Scott, Perth; J. Lockie Wilson, Toronto, and Mrs. Cadwell, Windsor.

Representative to Conservation Commission—R. B. Whyte, Ottawa.

THE ONTARIO WOMEN'S INSTITUTES

In accordance with the policy established last year, the Ontario Women's Institutes held annual conventions at three points in the province instead of at one place previously. There are now 869 Institutes in the province with a membership of very nearly, if not over, 30,000. Conventions were held at Ottawa on October 27th and 28th, at London on November 3rd and 4th, and at Toronto on November 10th, 11th and 12th.

The number of delegates at the different conventions was about as follows:—Ottawa, 90; London, 250; Toronto, 450. The average attendance at Ottawa was 125; London, 300; Toronto, 500. Quite a number who were not delegates or even members of the Institutes took advantage of the convention at all three places.

The following extracts are taken from Director Putnam's report for the year:

"The Institute is not only an effective organization established for the furtherance

of those objects with which you are all familiar, but has come to be a sort of foster-parent of other community efforts and organizations, as already reported by some of the delegates. The Institute has taken in hand for the whole community the work of the Red Cross and Belgian Relief, has encouraged literary societies, clubs for boys and girls, taken over the local library, organized community improvement committees, encouraged efforts looking to the instruction of the boys and girls along agricultural lines, organized Women's Institute orchestras (composed of men), and many other lines which need not be enumerated. Their efforts are the beginning of a unification of all local resources in each community throughout this fair Province, which if properly directed and earnestly supported cannot but result in Ontario continuing to be the fairest, most prosperous province of the Dominion with a contented people devoted

to the uplift of mankind. What else is worth while, if we have not each contributed our little part to make the community in which we live and the circle in which we move a little better because of our presence and efforts? The Institute is an organization in which we can be of real service in our day and generation. The day was when the great majority of the members were loud in their praise of the Institutes for the help they had received and the benefit they had derived, but the aim of the great majority now is to be of service through the Institute, so that life will mean all the more to the mothers, the fathers, the boys and the girls of the community. The Institute conducted along the proper lines cannot but be an uplift and inspiration to the whole community."

* * * * *

"The Institutes continue to take a deep interest in the welfare of the school children of the community both from an educational, social, and health standpoint. May this continue. We trust that provision may be made so that school committees appointed by the Women's Institutes will be recognized and their cooperation sought in making for more healthful and efficient rural schools. As an educational factor, our Demonstration-Lecture courses promise well, but in war years few of our good women are ready to devote time to systematic instruction. Since we met last year, a number of most successful courses have been given. The most popular and helpful courses have been those in food values and cooking, with the addition of four or five afternoons devoted to dairying and poultry raising. Home Nursing and First Aid to the injured are gaining in popularity, a natural result in war time, and you will be pleased to know that the St. John's Ambulance association is prepared to grant to those who take the course under a lady lecturer approved by their society, a form 'B' certificate."

PATRIOTIC WORK

It is impossible to summarize what the Institutes have done along patriotic lines, for before you have the statement half completed they have added materially to their gifts. It would appear that the more they give the more they are prepared to do. They have contributed directly to the main office of the Red Cross Society \$42,220.60, and it is impossible to find out, even though we wanted to, exactly what the Institutes have done through co-operation with other local organizations. A pleasing feature has been the readiness with which the Institute has been prepared to throw in its lot with other societies,

unifying the work and making it all the stronger. In a majority of centres where the Women's Institute exists, it is the only society to which you can look with any degree of hope to carry the work on aggressively, for it is the only organization which represents all the people. A conservative estimate of the total givings in cash to Red Cross, Patriotic Fund, Belgian Relief, and other patriotic efforts since the war began is at least \$75,000.00, and who can state the market value of the contributions of clothing, shirts, pyjamas, Balaclava caps, socks, etc., jam, various comforts and delicacies, etc., or what they have meant in labour, thought and self denial to the good women of the Institutes. The total value of these cannot be less than \$125,000.00, making a grand total of at least \$200,000.00, over \$7.00 per member. No body of women is more capable or more ready to put personal effort into the grave responsibility which rests upon us. You all know what some of the individual branches have done. A few examples will not be out of place.

Grimsby Institute:—

Cash to Red Cross....	\$ 594 00
In goods to Red Cross	700 00
Hospital Ship Fund.	5 00
Goods to Belgian Relief	150 00
Local Relief.. . . .	100 00
	<hr/>
	\$1,549 00

Niagara-on-the-Lake:—

Cash to the Red Cross . . .	\$296 00
Goods to the Red Cross	294 00
To Hospital Ship Fund. . .	287 00
To Patriotic Fund. . . .	25 00
Belgian Relief.	205 00
Goods to Belgian Relief.	844 00
Local Relief.. . . .	20 00
	<hr/>
	\$1,971.00

Pakenham:—

Goods to Red Cross.. . . .	\$125.00
Cash Hospital Ship Fund. . .	115 00
Patriotic Fund...	643.00
Cash Belgian Relief.	10.00
Goods Belgian Relief.. . . .	322 00
Goods Local Relief.	25 00
	<hr/>
	\$1,240.00

ADDRESS BY DR. G. C. CREELMAN

A prominent feature of these conventions was an address by Dr. G. C. Creelman President of the Ontario Agricultural College, on the subject of "Rural Leadership". Dr. Creelman stated that "There is a consensus of opinion that something is radically wrong with country life. The problems are not those of rural deterioration, nor of rural degeneracy; farmers are not

mentally or morally going back. To-day they are better housed, better fed, better clothed, better educated; crops are more easily handled, and there is not the old drudgery attending a good deal of farm labour. There is much more production to-day, 19 per cent more crops from the same soil than 20 years ago. It is not rural depopulation that is filling up the cities. There are four factors that go to filling up cities: first, the incorporation of many adjoining small places; second, natural increase; third, little emigration, which is only from 10 to 15 per cent; and last, increase by immigration, which is 65 to 70 per cent. The stumbling block is the point of view. What is needed is enthusiasm to tackle the problem, to gain a new outlook on life, to see the possibilities of enjoyment and the satisfaction in things. The speaker expressed his pity for the retired farmer who moves to the city, leaving his life-long friends in the country, and living with stern economy that precludes any idea of recreation as city people know it. He painted a word picture of the dreary life of enforced inactivity the retired farmer leads, and then contrasted it with what a force he might be if he stayed on a corner of his farm in a comfortable house with conveniences, after he had given over the management to the son or son-in-law. Here he could become the social leader, carry out his fads or theories regarding many things he had never had the leisure to experiment in.

The farmer has not yet become class conscious for his own rights. Dr. Creelman urged the women to spur on the men to a more wholesome respect for themselves in becoming leaders of the people. They must get after the rural schools, start schoolyard days, tree planting days. They must see that a capable teacher must not be lost to the country because of a slight increase in taxes. Then they must change the view-point on the question of consolidation of schools. Education and social life must go hand in hand. To-day the boys and girls are leaving the farm because of the meagreness of their lives. This must be changed, and the women must supply the initiative.

RESOLUTIONS ADOPTED AT THE OTTAWA CONVENTION

(1) That the Department of Education be asked to urge school boards, especially those in rural districts, to cooperate with committees appointed by the Women's Institutes in bettering school conditions.

(2) That the Department of Agriculture be asked to cooperate with Women's Institutes in formulating plans for the organizing of Girls' Institute Clubs in affiliation with the Women's Institutes, and that provision be made for the direction and in-

struction of members along vocational and cultural lines.

RESOLUTIONS ADOPTED AT THE TORONTO CONVENTION

That, in view of the value of the District Representatives throughout the province, and, in view of the fact that the standard of animal husbandry and the grain operations on the farm is being raised through the efforts of the said representatives,

Be it resolved, that Women District Representatives be appointed, where desired, to encourage the building, maintaining and furnishing of better homes; to disseminate knowledge on the nurture and care of children and to act as a central bureau of information for the district concerned.

Be it resolved, that Girls' Institutes be a feature of Institute work, the details of organization to be arranged by the Department of Agriculture in cooperation with the Institutes.

Be it resolved, that the Department of Agriculture arrange for short courses for girls to be given concurrently with those for boys; such courses to consist of instruction in home cooking, sewing and nursing; such courses of instruction to be given free of cost.

We further recommend that a few joint meetings be arranged on an educational and social basis.

That, whereas, many problems arise concerning the welfare of women and children; and, whereas, a local view for local remedies is not always feasible in other places, thus preventing action being taken on local recommendations; and, whereas, technical information is not at hand in remote places on all branches of work carried on by the Departments of our Government,

We do request the appointment of a Social Service Advisor, or Advisors, from whom information could be gleaned on various points.

Be it resolved, that every member of the Women's Institutes of Ontario wear the Institute pin over a small piece of purple and white ribbon as a tribute to the men who have given their lives at the front and in loving sympathy with the wives and mothers who mourn.

Be it resolved, that the appointment of Mrs. E. G. Graham of Brampton as Women's Institute representative to the National Service Committee be gratefully acknowledged by this Convention, and that we further assure her of the hearty cooperation of the women of the Institutes in providing field comforts for soldiers in the trenches.

REPRESENTATIVES TO THE PROVINCIAL COMMITTEE

For the Eastern District:—Miss E. McGee, Chesterville, Ont.; Mrs. R. V. Fowler, Perth, Ont.; Mrs. R. G. Leggett, Newboro, Ont.

For the Central District:—Mrs. H. J. Scripture, Brighton; Miss E. E. Haycroft, Bowmanville; Mrs. T. A. Patterson, Ellesmere; Mrs. B. J. Long, Meaford;

Mrs. Geo. Hanill, Acton; Mrs. J. H. Pearson, Glanford; Mrs. G. A. Smith, Delhi; Mrs. R. Boyes, Lefroy; Mrs. H. W. Parsons, Cochrane; Mrs. T. C. Dinsmore, Sault Ste. Marie, and Mrs. D. J. Piper, Slater River, all of Ontario.

For the Western District:—Mrs. Geo. R. Edwards, R. R. No. 3, Komoka, Ont.; Mrs. A. Hastings, Exeter, Ont.; Mrs. J. W. Trestian, Clachan, Ont.

CIVIC IMPROVEMENT LEAGUE

There was held in Ottawa on November 19th, under the auspices of the Commission of Conservation, a preliminary conference having in view the organization of a Civic Improvement League for Canada. There were represented at the meeting a large number of Town Planning Associations, Health Associations, Improvement Leagues, Boards of Trade, Children's Aid Societies, and other bodies. The objects of the proposed League, which were endorsed at the meeting, are defined as follows:—

To assist in promoting the highest interests of the city of . . . and the welfare of its citizens by the study and advancement of the best principles and methods of civic improvement and development, and by securing a general and effective public interest in all municipal affairs, with special regard to such questions as the following:

(1) The form and character of local government and the application of sound economic principles in regard to the administration of municipal business.

(2) The preparation of town planning schemes for the purpose of securing proper sanitary conditions, convenience and amenity in connection with the development of land within and surrounding the area of the city.

(3) The replanning of old districts, the removal of slum areas, the widening of public thoroughfares, and other reconstruction schemes.

(4) The conservation of the industrial and physical resources of the city, with special regard to the housing conditions and health of its citizens and the adequacy and efficiency of its public services.

(5) The preservation and increase of natural and structural beauty, the

character and position of public monuments, the laying out of parks and open spaces, the planting and preservation of trees, the regulation of public advertising, and the abatement of smoke and other nuisances.

(6) The preparation of civic surveys and maps, and the carrying out of investigations into housing, transportation and industrial conditions, methods of land valuation and assessment, etc.

(7) The promotion of school and college courses in civics and civic design, of exhibitions of works of art and of architectural engineering and other designs relating to civic improvements, and of public performances of music; and the provision of facilities for the recreation and physical development of the young.

(8) The means of securing increased production from the soil within and in the neighbourhood of the city by encouraging the cultivation of idle suburban land and a more widespread interest in gardening.

It was decided at this meeting to form a city improvement league to be called "The City Improvement League of Canada." Also that a National Council of the League be formed representative of the nine provinces of Canada and that steps be taken by such council to secure the formation of branches of the League in each city, town and municipality in the Dominion, or the affiliation with the League of existing local civic improvement leagues, boards of trade committees or other bodies interested in civic affairs.

Looking forward to the holding of a national conference in January next, a provisional committee was appointed to prepare a draft constitution for the proposed League.

THE COUNCIL OF AGRICULTURE AND COMMERCE

Toward the end of 1914 representatives of the commercial and agricultural interests of Western Canada met in Winnipeg for the purpose of working out a co-operative plan by which the interests of the various classes of people represented could be best served.

Recently an agreement has been reached and at a meeting held in Winnipeg early in November a joint committee was appointed to carry on the work to be undertaken.

The basis of constitution lays it down that all questions in which agriculture and commerce are jointly involved are to be included in the scope of the deliberations of the joint committee. The work of the joint committee will be to gather and diffuse information, to discuss and eventually formulate resolutions recommending certain lines of action to the separate organizations represented, or endorsing action recommended to the joint committee by all organizations represented.

At the meeting the following organizations were represented—Canadian Council of Agriculture, Canadian Credit Men's Association, Canadian Manufacturers' Association, Board of Trade, Industrial Bureau, Terminal Elevators, North West Grain Dealers' Association, Canadian Pacific Railway, Canadian Northern Railway, Grand Trunk Pacific, Retail Merchants' Association, Agricultural College, Western Retail Lumbermen's Association, Grain Exchange, and Winnipeg Implement Association.

The resolution adopted was as follows:

This Committee beg to report that, in their opinion, the time is ripe for a tentative basis for friendly consultation and cooperation on questions of joint interest to Agriculture and Commerce:—

For carrying out this purpose we suggest the following outlines:—

A joint committee to carry on this consultation shall consist of 40 members—20 from the commercial interests and 20 from the Canadian Council of Agriculture.

All questions in which Agriculture and Commerce are jointly involved shall be included in the scope of the deliberations of this joint committee. The work of the joint committee shall be to gather and diffuse information, to discuss and eventually formulate resolutions recommending certain lines of action to the separate organizations represented, or endorsing action recommended to the joint committee by all the organizations represented. In all cases pronouncement by this joint committee shall be made only if supported by all members present.

The quorum of the joint committee shall require the presence of five of the agricultural representatives and five of the commercial interests represented.

It was decided that the committee be known as "The Joint Committee of Commerce and Agriculture."

It was also decided that a sub-committee of ten be appointed—five from Agriculture and five from Commerce—to evolve a plan of work for recommendation to the joint committee. The following members were appointed:

For Agriculture—R. C. Henders and R. McKenzie, Manitoba; J. A. McHarg and J. B. Musselman, Saskatchewan; J. A. Speakman, Alberta.

For Commerce—W. L. Helliwell of Gurney, N. W. Foundry Co., representing the Canadian Credit Men's Association; Vere C. Brown, Bank of Commerce, representing the Bankers' Association; Geo. W. Allan, representing General Business Interests; Geo. N. Jackson, President of the Board of Trade; Jos. Campbell, Trust and Loan Co., representing Mortgage Loans Associations.

Mr. Henry Detchon was appointed secretary pro tem.

The committee for Commerce will nominate twenty, who in turn will nominate five to consult with the Agricultural representatives.

THE INTERNATIONAL IRRIGATION CONGRESS

The International Irrigation Congress departed this year from the usual custom of holding the annual meeting at one point. The Twenty-Second Congress met at four places in California—Stockton, on September 13th and 14th; Fresno, on September 15th and 16th; Sacramento, on September 17th and 18th; and concluded at San Francisco on September 20th. At its conclusion a warm note of thanks was accorded to Mr. L. A. Nares

and his associates on the California Board of Control for the unique plan of entertaining the "Congress on wheels" and for its highly pleasant and educational fulfilment.

In a long list of speakers, two officers of the Department of the Interior addressed the meeting on subjects of international interest, namely, E. F. Drake, Superintendent of Irrigation, and F. H. Peters, Commissioner of Irrigation. The

Premier of Saskatchewan also addressed the Congress at the closing session on behalf of all the foreign countries represented with the exception of China, that was represented by the Chinese Ambassador to the United States.

The following resolutions were adopted:

That this Congress appoint a committee on rural credits, land settlement and irrigation finances, to be composed of one member from each Western State and Province with a vice-chairman for the States and one for the Provinces, to make a study of systems now in operation and to submit a report with their recommendations at the next session of this Congress, or at an earlier date, if deemed advisable by the Chairman of such committee, such Chairman to be appointed by the President of this Congress.

That the Congress commend to the Congress of the United States favourable consideration of House Joint Resolution No. 344, 63rd Congress, 2nd Session, providing for the appointment by the President of a National Marketing Commission.

That Reclamation or other Government funds be used for the completion of meritorious irrigation construction projects

outside of those begun by the Reclamation Service.

That the Legislature of the several States be urged to meet fully their responsibilities in the control and supervision of irrigation districts with a view to efficiency of management and the securing of justice to investors.

That upon the Federal, State and Provincial Governments, the need of liberal appropriations for continuing the gauging of streams, topographic and hydrographic surveys, irrigation and drainage investigations, and co-operative studies of irrigation possibilities.

The following officers were elected:

President: Richard F. Burges, El Paso, Texas.

First Vice Pres. J. S. Dennis, Calgary, Alberta.

Second Vice Pres. L. A. Nares, Fresno, California.

Third Vice Pres. Geo. Albert Smith, Salt Lake City, Utah.

Fourth Vice Pres. Kurt Grunwald, Denver, Colorado

Secretary: Arthur Hooker, Fresno, California.

Chairman, Board of Governors: J. B. Case, Abilene, Kansas.

THE INTERNATIONAL DRY FARMING CONGRESS

At the tenth annual International Dry-Farming Congress held early in October, at Denver, Colorado, the following officers were elected:

President—W. M. Jardine, director of Kansas experiment station, Manhattan, Kansas.

First Vice-Pres.—Hon. Duncan Marshall, Minister of Agriculture for Alberta.

Second Vice-Pres.—Gov. Frank M. Byrne, South Dakota.

Third Vice-Pres.—L. Bradford Prince, former Governor of New Mexico.

Chairman Board of Governors—W. I. Drummond of Oklahoma.

Secy-Treas.—R. H. Faxon, Denver, Col.

On page 1161 of this number appears a list of the awards won by exhibitors in the province of Saskatchewan. In addition to these successful Canadian exhibitors were Nick Taitinger, Claresholm, Alberta, for the best bushel of two-rowed barley; H. C. Haegan, Winterburn, Alberta, for the best bushel of six-rowed-barley.

THE WESTERN CANADA LIVE STOCK UNION

The third annual meeting of the Western Canada Live Stock Union was held at Victoria, B.C., October 27th and 28th, 1915, the president, Dr. J. G. Rutherford, C.M.G., Chief of the Natural Resources department of the Canadian Pacific Railway, being in the chair. The Federal Commissioner of Agriculture, Dr. C. C. James, representing the Honourable, the Minister of Agriculture of the Dominion, and the following were present:—

From British Columbia:—Dr. S. F. Tolmie, representing the Dominion Depart-

ment of Agriculture; W. E. Scott, Deputy Minister of Agriculture for British Columbia; W. T. MacDonald, Live Stock Commissioner for British Columbia.

Representing the British Columbia Stock Breeders' Association:—A. D. Patterson, Ladner; A. Davey, Ladner; S. Smith, Dewdney.

Representing the Interior Stock Raisers' Association:—Senator Bostock, Ducks; Frank Ward, Kamloops.

Representing the Island Flockmasters'

Association:—G. H. Hadwin, Duncan; A. C. Aitken.

From Saskatchewan:—Hon. W. R. Motherwell, Minister of Agriculture for Saskatchewan; S. V. Tomeco, Lipton, Sask., representing the Saskatchewan Swine Breeders' Association.

From Manitoba:—Geo. H. Greig, Secretary, Manitoba Live Stock Associations; And. Graham, Roland, representing the Manitoba Cattle Breeders' Association; John Graham, Carberry, Man., representing the Manitoba Horse Breeders' Association; A. J. McKay, McDonald, representing the Manitoba Sheep Breeders' Association; W. H. English, Hardisty, Man., representing the Manitoba Swine Breeders' Association.

From Alberta:—Hon. Duncan Marshall, Minister of Agriculture, Edmonton; H. A. Craig, Deputy Minister of Agriculture, Edmonton; J. L. Walters, Clive, representing the Alberta Cattle Breeders' Association; R. Knights, Priddis, representing the Alberta Sheep Breeders' Association; J. H. Spencer, Medicine Hat, representing the Western Stock Growers' Association; E. L. Richardson, Calgary, secretary, Alberta Live Stock Associations.

The Honourable W. R. Motherwell, Minister of Agriculture for Saskatchewan, in a brief address announced the intention of his government to appoint a commission to inquire into the conditions of agriculture, especially as regards the live stock trade, marketing and transportation. Mr. Motherwell also stated that Saskatchewan that week was shipping to British Columbia twenty-four carloads of creamery butter.

The Mayor of Victoria having welcomed the delegates, Dr. Rutherford delivered his presidential address. He pointed to the importance of the live stock industry and to the necessity for cooperation. He believed the time was approaching when the Union would prove the most powerful factor in Western Canada in respect to production.

ADVISABILITY OF MIXED FARMING

Dr. James, in his capacity as Federal Commissioner of Agriculture, stated that he was there not for the purpose of giving information, but to listen to the views of the representatives of the live-stock industry in the West, and to obtain a close insight into their problems. He endorsed the statement made by the chairman that no country could continue to prosper on a single crop system. In order to bring home this point he had obtained some figures with respect to the wheat crops, showing what the acre had paid the farmer on the average per year.

1910: 14.89 bushels per acre, at 75 cents; average earnings per acre, \$11.67.

1911: 20.80 bushels per acre at 64 cents; average earnings per acre, \$13.31.

1912: 20.38 bushels per acre at 62 cents; average earnings per acre, \$12.64.

1913: 21.04 per acre at 67 cents; average earnings per acre, \$14.10.

1914: 15.37 bushels per acre at \$1.43; average earnings per acre, \$21.98.

1915: (According to latest figures) 25.89 bushels per acre at 80 cents; average earnings per acre, \$20.71.

A scrutiny of these figures, the Commissioner remarked, would show that Canada could not place dependence on the wheat crop of the Middle West alone. Regarding the matter from a national standpoint, there was no doubt that wheat growing had to be supplemented by mixed farming. As soon as that was mentioned, the necessity of obtaining markets was realized. Because of this the Federal officials had decided last summer on the establishment of a markets division of the Agricultural Department. Going on to deal with the need of co-operation, Dr. James referred to the work of the egg circles in Prince Edward Island and to the better returns to farmers resulting from the grading of wool. Why should not a similar principle be carried through the live stock industry? This was the question that was being considered at Ottawa. Reference followed to the growing importance of the live stock industry and the negotiations being carried on by the Federal Department of Agriculture with the British government for supplies of dressed meat.

A SERIES OF RESOLUTIONS

A variety of subjects relating to the welfare of the Union, and to the advancement of the live stock industry, were discussed and the following resolutions passed in connection therewith:—

THAT the president appoint a committee to gather evidence in Canada and elsewhere regarding the best method of controlling stock yards and the live stock trade generally, said committee to present the information obtained to the Dominion Economic Commission when taking evidence.

THAT the Western Canada Live Stock Union is of the opinion that no legislation should be passed on by the federal government or by any of the four Western Canadian legislatures respecting the live stock interests of Western Canada without consultation and co-operation of the executive of this Union, and that a copy of this resolution be sent to the Dominion Minister and the Ministers of Agriculture throughout Canada.

THAT this Union being much impressed with the great importance of utilizing if possible and if not detrimental to good

farming, the screenings of the elevators, and respectfully request the Provincial Departments of Agriculture to thoroughly investigate this matter in conjunction with the Dominion Seed Commissioner, and to request that a report on the subject be made to this Union.

THAT a committee of four be appointed to watch the progress in connection with the new live stock contract before the Board of Railway Commissioners, and to look after the interests of the Live Stock producers in this matter. A committee of W. F. Stevens for Alberta, John Graham for Manitoba, Hon. W. C. Sutherland for Saskatchewan and J. T. McDonald for British Columbia was appointed.

WHEREAS the more general adoption of diversified farming is becoming more and more essential to the establishment of agriculture on a permanent and successful basis in the Western provinces of Canada;

AND WHEREAS the conditions for the marketing of live stock must be such as to establish confidence, that the producer is receiving a fair and just recompense for his efforts in the production of commercial live stock in order that stock raising may become a more permanent industry;

THEREFORE be it resolved that in the opinion of this Western Live Stock Union, Federal legislation is necessary to regulate and control the marketing conditions of live stock, including:—

The licensing and bonding of commission men;

The establishment of stock yards where necessary;

The weighing of stock at the stock-yards;

The abolition of the uniform levy now made by the abattoirs on all stock, whether diseased or sound; and,

Such other provisions as may be deemed necessary to safeguard the live stock interests of the West in a manner similar to that so effectively provided for the protection of the grain growers' interests by the Canadian Grain Act,

And further, that copies of this Resolution be forwarded to the Hon. Martin Burrell, Minister of Agriculture, and to the chairman of the recently appointed Economic Commission;

WHEREAS the Railway Commission has recently authorized the charge of 75 cents per car for cleansing and disinfecting stock cars, and the Railway Companies are enforcing the same;

AND WHEREAS Federal Government regulations for the cleansing and disinfecting of stock cars have been in force for a number of years and the Railway Companies have complied with them until recently without extra charge;

BE IT RESOLVED THAT the Western Canada Live Stock Union now in session is of the opinion that this added cost to the shipment of cattle is unjust, and that the shippers have reasonable right to expect that when stock cars are ordered by them, that they shall be received in a clean condition in accordance with the regulations governing this traffic, and that the cleansing and disinfecting be done at the expense of the railway companies.

RESOLVED THAT pending the establishment of the International Tribunal for the control of ocean freight rates, this Union would strongly urge upon the Government of Canada the desirability of taking every possible step to remedy existing conditions in this regard, which are seriously depreciating live stock values throughout Canada.

THAT the Western Canada Live Stock Union representing the Live Stock Associations west of the Great Lakes, desires to express its approval of the organization of the Live Stock Markets branch in connection with the Dominion Department of Agriculture. Realizing the great importance to an industry of having available as full information as possible at all times in regard to the numbers and distribution of live stock in Canada and market conditions, we would strongly urge upon the Dominion Minister of Agriculture that this part of the work be developed as rapidly and thoroughly as possible, and that the live stock producers of Canada be kept fully and promptly informed along the lines of supply and demand.

THAT the president and secretary be instructed to prepare a memorandum embodying the principles of election by ballot of directors on the Boards of the various Canadian Breed Societies on the plan outlined in the resolution passed at the joint meeting of Eastern and Western breeders held at Winnipeg, Thursday, July 16th, 1914. Said memo to be used by the representatives of the Union serving on the committees appointed at the last annual meeting of the Breed Societies, as a basis on which to prepare the said amendments to the Constitutions of the said Breed Societies as may be required to bring the new arrangement into effect.

BE IT RESOLVED that the Western Canada Live Stock Union now in convention assembled, respectfully request the Dominion Minister of Agriculture to make provisions whereby all cattle in regard to which the tuberculin test is required by the authorities of British Columbia and the United States, be officially tested in the Province where the shipment originates.

ELECTION OF OFFICERS

The election of officers resulted as follows:

Hon. President—Hon. Martin Burrell.
President, by acclamation—Dr. J. G. Rutherford.

Vice-Presidents—Dr. Tolmie for British Columbia, J. L. Walters for Alberta, Hon. W. C. Sutherland for Saskatchewan, and Andrew Graham for Manitoba.

Secretary-treasurer—E. L. Richardson, Calgary.

Auditor—Jas. B. Sutherland, Calgary.
Dr. Rutherford and Dr. Tolmie were appointed associate delegates to the National Live Stock convention of the United States, to be held in Texas.

Calgary was selected for the next place of meeting and the date moved forward to the early part of November, the exact days to be decided by the executive.

The delegates were entertained to a banquet in the evening by the British Columbia Live Stock Association.

THE WESTERN CANADA FAIRS ASSOCIATION

At a meeting held in Edmonton on November 15th and 16th, the amalgamation was consummated of the Western Canada Fair Managers' Association and the Western Canada Fair and Racing Circuit under the title of The Western Canada Fairs Association. The officers elected were:—President, D. T. Elderkin, Regina, Sask.; vice-president, W. I. Smale, Brandon, Man.; secretary-treasurer W. J. Stark, Edmonton, Alta.; executive committee, E. L. Richardson, Calgary, Alta.; C. D. Fisher, Saskatoon, Sask.; D. E. Mackenzie, New Westminster, B.C.; S. A. Ferrie, North Battleford, Sask., and W. E. Lord, Red Deer, Alta. The inaugural annual meeting is to be held in Regina on January 25th, 1916. Meantime the following dates for fairs in 1916 have been agreed upon:—

Calgary June 29 to July 5.
Red Deer July 6 to 8.
Edmonton July 10 to 15.
Brandon July 17 to 22.

Regina. July 24 to 29.
Saskatchewan. July 31 to August 5.
North Battleford. August 7 to 9.
Prince Albert. August 10 to 12.

The fifth annual combination sale of sheep and swine conducted by the Saskatchewan Sheep and Swine Breeders' Association, was held in Regina at the end of October. This was quite the most successful of these sales yet held. The offerings consisted of pure bred males and females of both sheep and swine, as well as a small offering of grade ranged ewes. The first nine rams offered brought an average of \$40.66 each. All of the pure bred sheep averaged \$32.00 per head as compared with \$21.50 last year, when some of the offerings had to be withdrawn for want of buyers. Orders were taken for 2,200 head of graded ewes at \$7.75 per head. In swine the sows averaged \$21.00 and the boars \$25.00 per head.

THE ENTOMOLOGICAL SOCIETY OF ONTARIO

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST, ENTOMOLOGICAL BRANCH, OTTAWA

UNDoubtedly the most successful entomological convention which has ever taken place in Canada was held in the large laboratory of the Entomological Branch of the Department of Agriculture, Ottawa, on Thursday and Friday, November 4 and 5, 1915, the occasion being the fifty-second annual meeting of the Entomological Society of Ontario. Throughout the entire sessions the closest interest was evinced in the papers presented, most of which were of decided importance to farmers, horticulturists and others interested in agriculture. Valuable discussions followed the presentation of many of the papers. The Dominion Entomologist, Dr. Hewitt, presided and entomologists from nearly every province in Canada were in attendance as well as prominent authorities from the United States. Among those

who were present were Dr. H. T. Fernald, Amherst, Mass., who delivered the popular illustrated lecture on Thursday evening, Nov. 4, his subject being "Life Zones in Entomology and their relation to crops"; Mr. A. F. Burgess, Melrose Highlands, Mass., who has charge of the U.S. Bureau of Entomology Gipsy and Brown-tail Moth work; Dr. Hugh Glasgow, Geneva, N.Y.; Prof. C. P. Lounsbury, Chief of the Division of Entomology, Union Department of Agriculture, Pretoria, South Africa; Rev. Thos. W. Fyles, Ottawa; Prof. W. Lochhead and Mr. E. M. DuPorte, Macdonald College, Que.; Rev. Father Leopold and Prof. Letourneau, La Trappe, Que.; Prof. L. Caesar, Provincial Entomologist; Prof. E. J. Zavitz and A. W. Baker, Ontario Agricultural College, Guelph, Ont.; A. F.

Winn, Westmount, Que.; J. C. Chapais, St. Denis en bas, Que.; H. G. Crawford, Wilton Grove, Ont.; F. J. A. Morris, Peterboro, Ont.; C. Macnamara, Arnprior, Ont.; Prof. W. Brittain, Provincial Entomologist, Truro, N.S.; H. G. Payne, Kentville, N.S.; Sir James Grant, Ottawa; Dr. F. T. Torrance, Veterinary-Director-General; Dr. F. T. Shutt, Dominion Chemist; W. T. Macoun, Dominion Horticulturist; Dr. C. H. Higgins, Pathologist; F. W. L. Sladen, Apiarist of Dominion Experimental Farms; R. H. Campbell, Director of Forestry; H. T. Güssow, Dominion Botanist; W. Ide, Dept. of Agriculture; D. Johnson, Dominion Fruit Commissioner; and, in addition to the President, the following members of the

"The Home of *Gortyna stramentosa*."—A. F. Winn.

"Observations upon some of the Predaceous and Parasitic Hymenoptera."—Rev. Thos. W. Fyles.

"The Leaf Weevil (*Polydrosus impressifrons* Gyll) in New York."—P. J. Parrott and Hugh Glasgow.

"Side-worm Injury by the Codling Moth."—E. P. Felt.

"*Lygus invitus* and its Control in 1915."—W. Brittain.

"A capsid attacking apples."—H. G. Crawford.

"The Founding of the Science of Cecidology."—A. Cousens.



DELEGATES IN ATTENDANCE AT THE ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO

Entomological Branch; Arthur Gibson, Chief Assistant Entomologist, J. M. Swaine, Asst. Entomologist for Forest Insects, R. C. Treherne, G. E. Sanders, E. H. Strickland, G. Beaulieu, J. D. Tothill, Norman Criddle, L. S. McLaine, W. A. Ross, C. E. Petch, R. N. Chrystal, J. R. Gareau, Field Officers, A. E. Kellett, Artist Assistant, and J. I. Beaulne, Inspector.

The following papers were presented:

"Insects of the Season in Ontario,"

"Willow and Poplar Curculio."—L. Caesar.

"Insects of Ste. Annes, Que., season of 1915," "Occurrence of *Tychius picirostus* on Clover at St. Annes, Que."—E. M. DuPorte.

"The Army Cutworm in Southern Alberta."—E. H. Strickland.

"Some Notes on Nose and other Bot Flies."—W. Lochhead.

"Further Notes on the Warble Fly, *Hypoderma bovis*."—S. Hadwen.

"Forest Insect Investigations in Canada."—J. M. Swaine.

"The Life-history of *Chermes cooleyi* in Stanley Park, B.C."—R. N. Chrystal.

"The Cabbage Maggot in British Columbia." (a) Natural Methods of Control, (b) Autumn development."—R. C. Treherne.

"Fresh Woods and Pastures New."—F. J. A. Morris.

"Some of the Methods Followed in Nova Scotia, in controlling the Brown-tail Moth."—G. E. Sanders.

"Raising Brown-tail Moth Parasites at Melrose Laboratory for Distribution in Canada."—L. S. McLaine.

"Locust Control Work with Poisoned Baits, in Eastern Canada, 1915."—Arthur Gibson.

"Apple Leaf-rollers in Ontario."—L. Caesar.

In addition to the above brief addresses were given by Dr. Hewitt, Mr. Chas. Macnamara on the life-history of *Thalessa* and by Mr. J. D. Tothill on recent work on the introduction into Canada and colonization of parasites of the Gipsy Brown-tail Moths. All of the papers presented at the meeting, as well as a full account of the discussions, will be published early in 1916 as the Forty-sixth Annual Report of the Entomological Society of Ontario. The new officers of the Society are:

President: A. F. Winn, Westmount, Que.
Vice-President: Prof. L. Caesar, Ontario Agricultural College, Guelph, Ont.

Secretary-Treasurer: Mr. A. W. Baker, B.S.A., Lecturer in Entomology, O. A. College, Guelph, Ont.

Curator: Mr. G. J. Spencer, B.S.A., Demonstrator in Entomology, O. A. College, Guelph.

Librarian: Rev. Prof. C. J. S. Bethune, M.A., D.C.L., F.R.S.C., Professor of Entomology and Zoology, O. A. College, Guelph, Ont.

Directors: Division No. 1, Mr. Arthur Gibson, Entomological Branch, Department of Agriculture, Ottawa; No. 2, Mr. C. E. Grant, Orillia; Division No. 3, Dr. A. Cosens, Parkdale Collegiate Institute, Toronto; Division No. 4, Mr. C. W. Nash, Provincial Biologist, East Toronto; Division No. 5, Mr. F. J. A. Morris, Peterboro; Division No. 6, Mr. J. W. Noble, London, Ont.; Division No. 7, Mr. W. A. Ross, Vineland Station, Ont.

NEW PUBLICATIONS

THE DOMINION DEPARTMENT OF AGRICULTURE

THE DOMINION EXPERIMENTAL FARMS.

THE DIVISION OF BOTANY

Fruit Tree Diseases of Southern Ontario, by W. A. McCubbin, M.A., assistant in charge Dominion Plant Pathological Laboratory, St. Catharines, Ont., constitutes No. 24 of the second series of bulletins of the Dominion Experimental Farms. This bulletin, as stated in the letters of transmittal, "does not aim to give a complete list of the fruit-tree diseases occurring in Ontario, nor to present a merely technical account of the diseases and fungi causing same. It has been prepared to meet the requirements of the practical fruit grower, whom it is desired to assist in the control of the destructive diseases by means of the most up-to-date and approved methods." The author, in this work, has described these diseases and their nature, has furnished information for their identification and various means to be taken for their prevention and control. Numerous original illustrations greatly enhance the value of this bulletin to the practical fruit grower.

DAIRY AND COLD STORAGE BRANCH

Feed Book, Record of Feed for the Dairy Herd, published by direction of the Honourable, the Minister of Agriculture, is a

forty-page note book, 8½ by 5½ inches, designed as the title indicates. Each page is arranged for the thirteen weeks' record of an individual cow. Columns are ruled off for the quantity of meal, ensilage, roots and hay fed each week. Two blank columns are left for other feed and a column for pasture. At the bottom of the page there is provision for totals of quantities and values and for remarks. The book is intended for free distribution and can be had on application to the Dairy and Cold Storage Branch, Department of Agriculture, Ottawa.

Cow Testing Notes, Circular, No. 16, Dairy Division. Describes the nature of cow-testing and the methods followed under the direction of the Dairy and Cold Storage Commissioner; tells the equipment necessary, how to weigh and take samples, how to test for butter fat, why dairymen should keep records and what some dairymen have accomplished by cow testing. In a number of districts the Department has organized dairy records centres, from which in the month of July this year no fewer than 22,669 records were received at the office of the Branch, Ottawa.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

QUEBEC.

Farm Poultry, by M. A. Jull, B.S.A., Manager and lecturer, Poultry Department,

Macdonald College (McGill University), 1915. Here is a valuable and comprehensive 100 page treatise in blue-grey covers on matters relating to the poultry farm. A series of no fewer than 100 plates and illustrations lend attractive aid and interest to the very explicit text. Both the egg and the chick are traced through all the various grades and conditions to the market and to the table. In the introduction the information is conveyed, that, as everywhere else, eggs and dressed poultry are in constant and increasing demand in Quebec, due in the first instance to a considerable extent to the improved quality of the products marketed; secondly, to the increase of the population and, thirdly, to the fact that there has been an increase in the consumption of eggs per capita of about four dozen per year in 1911 over 1901. To furnish the demand for eggs and poultry due to the increase of city dwellers, we are told, the province of Quebec imported, in 1913, 812,201 dozen at 19c. per dozen, amounting in value to \$156,740, and in 1914, 1,103,118 dozen at 25c. per dozen, totalling in value \$280,429. Against the latter the province exported in 1914 eggs to the value of \$396, live poultry to the value of \$6,113 and dressed poultry to the value of \$17,112, a total of \$23,621 or about a twelfth of the importations. The pamphlet deals with the breeds, breeding both for meat production and egg production, with methods of incubation, brooding, feeding, care and fattening of stock, grading and preserving eggs, grading and classifying poultry, diseases and pests, short courses in poultry husbandry and extension work. A chapter on "External Parasites", by W. Lochead, B.A., M.Sc., Professor of Biology, is exceptionally instructive.

Maple Sugar and Syrup Cooperative Agricultural Association; Report of proceedings of the third annual meeting held at Beauceville, January 12th, 1915. The features of this 47-page report are the addresses of Mr. Joseph H. Lefebvre, secretary-treasurer of the association, on the importance of the maple sugar and syrup industry and the work and influence of the organization, and Professor S. F. Snell, Chemist of Macdonald College and vice-patron of the association, on "The Utilization of Maple Sugar Sand." Both are replete with information of value to the maple sugar producer.

The Report of the State of the Crops in the Province of Quebec for October, 1915, published by order of the provincial Minister of Agriculture, Hon. J. E. Caron, will be found useful in the future for reference. From it the facts are gathered that Timothy while of good quality, was 33 per cent below the average, that clover suffered from spring frost and summer drought, that pastures were very poor, that the

potato crop was above the average, that the Indian corn crop was particularly good in the Eastern Townships, that in feed roots mangolds gave the best yield, that frosts towards the end of August damaged tender plants like tomatoes and tobacco, that good work is being done in the eradication of caterpillars, that there was an increase in the sown land and better preparation of the soil and that in several counties of the province it will be necessary next spring to take preventive steps against smut in seed grain, which harmed the oat-fields. Succeeding a summary conveying the foregoing information reports are given in detail from counties and districts with tables of percentages, and comment, founded thereupon, of the nine groups into which the province is divided.

ONTARIO.

Fruit Branch Circular, No. 6, issued by the Ontario Department of Agriculture, deals with varieties of apples for planting, recommending the Spy as the hardiest and best seller; with apple market conditions and the Ontario apple crop. From the report on the last mentioned it is learned that unfavourable weather had brought about so much apple scab that there was a possibility the crop had been reduced 40 per cent. The use of a box rather than a barrel for packing and shipping is recommended. The second page of the circular is devoted to Vineland Experiment Station matters and it is announced will be so devoted in future numbers. Vineland is situated on the shore of Lake Ontario in Clinton township. It is the locale of the Provincial Fruit Experimental Station, where tender fruits receive most consideration. The members of the staff at the station are especially anxious for correspondence, which should be addressed to Horticultural Experimental Station, Vineland, Ont.

Ontario Agricultural College Calendar, 1915-16. From this capitably and numerously illustrated calendar it is gathered that from the 28 students with whom the college opened in 1874 has grown an attendance of 1184, which was the record for 1914-15. In like manner the institution has developed from one central structure and auxiliary barns and sheds to sixteen departmental buildings with corresponding outhouses in addition. The college farm covers an extent of 700 acres, of which 75 acres is devoted to experimental work. There are 60 professors, lecturers and demonstrators on the teaching staff, who are also engaged in extension work. The Calendar out-lines the courses required for diplomas and graduation, giving at the same time details of the annual expense involved. The college opens Sept. 15th and closes April 15th, during which time it is estimated an outlay of \$141.50 will

meet tuition fee, laboratory fee, college society fees, board and room and books. In reduction of the total it is estimated \$20 or more can be earned the first year by work on the farm and departments. Four years' study are required for the B.S.A. degree, two being devoted to science at Toronto, Queen's or McMaster University and two to the Ontario Agricultural College. Particulars are given of the different short courses, of which two weeks are given to stock and seed judging and 4 weeks to poultry raising. Three months are devoted to dairying, young men being prepared as managers of creameries and cheese factories. A two weeks course in bee-keeping is given. A year's course in manual training, to which only teachers holding permanent certificates are eligible for entrance and the tuition fee to which is \$15 for three months, is provided. In Macdonald Hall a two-year-course in Domestic science is given. An associate course of two years is planned for the girl desirous of preparing for life in the country. A house-keeper's course of two years is designed to prepare women to become professional or skilled housekeepers and home-makers. Preference is given to farmers' daughters in the home-maker course of one year. A short course of one term is planned for girls who cannot spend much time in extraneous study. All the activities of the college are briefly described.

Ontario Agricultural and Experimental Union, 1914, Thirty-Sixth Annual Report. In addition to detailing the operations of the Union, the reports include the following papers: Results of Cooperative Experiments in Agriculture, C. A. Zavitz; Important Results from the Use of Legume Bacteria on Alfalfa and other Legumes, D. H. Jones; Results of Cooperative Experiments in Apiculture, Morley Pettit; Cooperative Experiments in Weed Eradication, J. E. Howitt; The Weed Problem, W. J. Lennox; Canada's Chance in Heavy Horse Breeding, Dr. Grenside; Bean Growing in Ontario, J. O. Laird; Some Important Ways in which Farm Life in Ontario might be Improved, N. Monteith; Production More Than Usual, Dr. C. C. James; and a Trip to New Zealand, Australia, China and Japan, Dr. G. C. Creelman.

Annual Reports Dairywomen's Associations, 1914. This publication of 148 pages contains reports of both the Eastern and Western Dairywomen's Associations, as well as of the dairy schools at Guelph and Kingston. At Guelph 61 students attended the twelve weeks' course for cheese and butter makers, 43 the one week's course for farm cow-testing, 14 for one week's course in ice-cream making and 10 the one week's course for instructors, totalling 128. At Kingston 49 attended the eleven weeks'

course for cheese and buttermakers and 21 the one week's course for Eastern Dairy Instructors, totalling 70. Besides details of the proceedings of the associations in meeting, papers and addresses are embodied in the reports from many leading authorities on dairying and officials of both the provincial and federal governments.

BRITISH COLUMBIA.

The Fifteenth Annual Report of the Farmers' Institutes of British Columbia, embodying the minutes and proceedings of the sixteenth annual convention held at Victoria in January, constitutes a 64-page publication. The report states that in 1911 the membership of Farmers' Institutes in the province totalled 6,070, in 1912 it was 6,901 and in 1913 a grand total of 8,144 had been reached. In the latter year 15 new institutes were formed, making a total of 91 incorporated branches. In addition the various activities of the year are reviewed, and the full text of papers and addresses given at the convention are included.

The Proceedings of the Entomological Society of British Columbia, June, 1915, published as bulletin No. 6, N.S., under the direction of the Provincial Museum of Natural History, contains a number of addresses including the Presidential address; nomenclature and classification delivered by G. O. Day, F.E.S., of Duncan, V.I., B.C.; Notes on *Lithocolletis gaultheriella*, by R. N. Chrystall; Further Notes on the Species of the Genus *Hydriomena*, by E. H. Blackmore; changes in Geometrid Nomenclature, by E. H. Blackmore; Insects in the Atlin District, by E. M. Anderson, and Butterflies in Brazil, by Darwin.

The Proceedings of the Entomological Society of British Columbia for July, 1915, published as Bulletin No. 7, N.S., consist of two parts. Part one contains the report of the second midsummer meeting of the Society held at Kelowna, B.C., on August 20th, 1914. The following addresses delivered at this meeting are quoted in full: Insect Notes from Okanagan Valley, 1914, —M. Ruhman; Control of Incipient Infestation of Codling-moth in a New District—W. H. Lyne; Sprays of Up-to-date Interest—L. L. Palmer; The Tarnished Plant-bug—R. C. Treherne; The Part played by Insects in the Spread of Plant-diseases—J. W. Eastham. Part 2 contains the report of the fourteenth annual meeting of the society held in Vancouver on January 16th, 1915. Addresses given at the annual convention and included in this report are: Insect Pests of the Greenhouse—G. E. Wilkerson; Insects of the Lower Fraser Valley—F. H. Getchell;

Comments on Some Peculiarities in connection with the Life-history of the Codling-moth on the Pacific Coast—W. H. Lyne; Shade-tree and Ornamental Insects of British Columbia—R. C. Treherne; The Outbreak of Locusts of 1914—Tom Wilson; Birds likely to be of Use in the Destruction of Locusts in the Nicola Valley—L. E. Taylor; The Kansas Remedy for the Control of Locusts—Arthur Gibson, Ottawa.

Spray Calendar for 1916. Circular No. 6 of the horticultural branch of the British Columbia Department of Agriculture is a calendar prepared by the Plant Pathologist, J. W. Eastham, B.Sc., stating when and how spraying should be done in the case of different kinds of fruits and vegetables. Remedies are also given for the pests that will not be controlled by spraying. The calendar is supplied freely on application to the Department.

MISCELLANEOUS

A Propos du Comptoir Coopératif. Lettre de S-Eminence le Cardinal Begin, au Rev. P. Bellemare, S. J.; Discours Prononcé par M. L'Abbe Michaud a la réunion plénière des actionnaires du Comptoir tenue à Québec, le 2 Septembre 1915. This is a pamphlet printed in French containing a lecture by the author delivered before the members of the Co-operative Store of Montreal at Quebec, to encourage the cooperation of members of circles and cooperative societies throughout the province with the central organization at

Montreal in the purchase of agricultural necessities and the sale of agricultural products.

Commission of Conservation, Canada; Sir Clifford Sifton, K.C.M.G., chairman, James White, assistant to Chairman and Deputy Head; Report of the Sixth Annual Meeting held at Ottawa, January 19-20, 1915. The report fills 333 pages 6½ in. by 9½ in., and forms a work of rare variety, usefulness and interest. It includes papers and addresses on Technical Education, Canada's Non-Metallic Minerals, Conservation of Mineral Resources, Investigations and Legislation affecting the Mining Industry, Preservation of Railway Ties, Fire Protection from the Standpoint of the Railways, Administration of THE AGRICULTURAL INSTRUCTION ACT, Protection of Sea Fowl, The Protection of Birds, Co-operation in Forestry, Successful Fire Protection, Water-Power Problems, Activities of the Committee on Water Power, the Conservation Press Service, Housing and Town Planning, the Canadian Fresh Sea Fish Trade, the Forest Fire Situation in 1914, Forestry in Quebec, Work of the Committee on Lands, Agricultural Surveys and Illustration Farms. Appendices contain reports of the National Conference on City Planning held at Toronto in May, 1914, and on Recent Town Planning Progress in the Maritime Provinces and a Memorandum addressed to the Commission recommending the creation of three new national parks. Upwards of thirty photo engravings increase the value and interest of the Report.

BOOK REVIEWS

The Illumination of Joseph Keeler, Esq., or On To the Land, by Peter H. Bryce, M.A., M.D., Chief Officer of Immigration of Canada; published by The American Journal of Public Health, 755 Boylston St., Boston, Mass.; 6¼ by 9¾ in., 97 pages.

Here is a book that reads so much like truth that it is difficult not to believe in its actuality. Its characters are real characters and the ultimate developments, if idealistic, are not beyond possibility. Joseph Keeler, a wholesale merchant of Toronto, discovers himself by visiting the district back of Brighton in Northumberland Co., Ontario, where he learns of his ancestry or rather of his forbears, for the story does not go further back than the hero's great-great-grandparents. He becomes possessed of their devotion not to the city but to the soil of the country in the district of Presqu' Isle Bay, being especially attracted by the stories of his great-great-grandmother, whose enthusiasm for the life led her to describe the period in the

term "Those were halycon days." The allegory, as Professor W. T. Sedgwick, of the Massachusetts Institute of Technology, terms this really charming work, is brought out in a series of conversations between Joseph Keeler and a University Professor of Social Economics, both of whom by this exchange of thought and opinions receive much enlightenment and broadening of view regarding the great problem of the desertion of the rural life for that of the town and the city. After considerable domestic trouble through the waywardness of the eldest son, who goes into law, and the frivolities of a daughter, Ernest, a younger son, expresses a preference for rural life, and his father buys him a farm and sends him to the Agricultural College at Guelph. Meantime the eldest son and the daughter, whose health had given way from an excess of gaiety, visit the farm for recuperation. They become enamoured of the life and settle down with benefit to themselves and to the surround-

ing community, the members of which are induced to go in strenuously for cooperation, which naturally means tremendous improvement of social and economic conditions. The book happily combines instruction and information with philosophy and romance.

The Wheat Industry, for use in schools, by N. A. Bengtson, A.M., and Donee Griffith, A.M., Department of Geography and Conversation, The University of Nebraska; The Industrial Series, edited by G. E. Condra; 341 pages, 5 in. by 7½ in.; New York, The Macmillan Co., 1915. Price 65c.

In giving attention to this work it should be premised that the schools it is intended for are United States schools. It purports to be nothing more than a text book for use by these schools. Opening with a brief explanatory summary addressed to the reader the seventeen subsequent chapters furnish information on The Wheat Plant, Cultivation and Growth, Harvesting, Threshing, Transportation and Storage, Production, Marketing, Milling, Use of Wheat Products, Industrial Review, Wheat in Australia, Argentina, The United States, Canada, Asia and Europe. Each chapter is flanked by a series of questions designed to impress the facts supplied on the minds of students. A number of illustrations of scenes in wheat cultivation, reaping and shipping in the different countries referred to, adorn the book and increase its usefulness.

Soils; Their Properties and Management, by T. Lyttleton Lyon, Ph.D., Professor of Soil Technology, Cornell University; Elmer O. Tippin, B.S.A., Extension Professor of Soil Technology, Cornell University; Harry O. Buckman, Ph. D., Assistant Professor of Soil Technology. The Rural Text Book Series, edited by L. H. Bailey; 764 pages, 5 in. by 7½ in. New York and Toronto, The Macmillan Co., 1915.

As nearly as possible this work is a complete digest of the soil in all its aspects and phases. It comprises chapters on composition of the soil, soil-forming processes, geological classification of soils, climatic and geochemical relationships of soils, the soil particle, some physical properties of the soil, organic matter of the soil, colloidal matter of soils, soil structure, forms of soil water and their movement, water of the soil in its relation to plants, control of soil moisture, soil heat, availability of plant nutrients as determined by chemical analysis; absorptive properties of soils, acids of sour soils, alkali salts, absorption of nutritive salts by agricultural plants, organisms of the soil, the nitrogen cycle, the soil air, commercial fertilizers, soil amendments, fertilizer practice, farm manures, green

manures, land drainage, tillage irrigation and dry farming, the soil survey. Tabular analyses, diagrams of formation and location, drawings of implements and geological lines and coloured plates of topographical interest go to make a comprehensive text book of the greatest value to students and to those who desire to understand in a practical way the characteristics, nature, cultivation possibilities and productiveness of the land.

In Pastures Green, by Peter McArthur, author of "The Prodigal and Other Poems," "To be Taken with Salt," etc. J. M. Dent & Sons, Limited, Toronto and London; 364 pages, 5 inches by 7 inches.

If Mr. McArthur had entitled his book "The Joy of the Land" its character would perhaps have been better conveyed, for the work is replete with buoyancy, with the joy of life as well as with the joy of the land. The dedication is "To all city men who are talking of going back to the land." If each one who does not go buys a copy, the author says he will be entirely satisfied, which can be easily understood. In the preface it is explained that the essays which the book contains were written for *The Toronto Globe* and *The Farmer's Advocate*. Mr. McArthur also says that "As they deal with all kinds of farm work at different seasons of the year they have been cast into the form of a journal (or monthly diary) in order to give the volume some degree of continuity. The man who wishes to learn the human side of farming may find something to interest him, but the man who consults these pages for scientific information does so at his peril." The woman who wishes to learn might well have been included with "the man."

While there is no indication of dullness or depression in the book from first to last, beneath the veil of humour and lightheartedness a fund of useful information is to be found gathered from actual and observing experience. Mr. McArthur does not aspire to compete with the experts of experiments, or the sages of collegiate agriculture, but he writes entertainingly, vividly and learnedly of material things and the springs of existence as they have appeared to a sunshiny nature. The book, travelling as it does well over the realm of products of the soil, with peeps at intervals into farm-house domesticity, is thoroughly calculated by its cheeriness and gay good humour to brighten a winter evening, to lighten the load of drudgery, and to bring hope and courage to the weary.

The Means and Methods of Agricultural Education, by Albert H. Leake, Inspector of Manual Training and Household

Science, Ontario, author of "Industrial Education; Its Problems, Methods and Dangers"; Hart, Schaffner and Marx Prize Essays in Economics; Houghton Mifflin Company, Boston and New York; 297 pages, 5 x 8 inches.

Mr. Leake has here given us an exact study of agriculture in its various phases and conditions. In doing so he has delved into many books and searched many authorities with the result that he has produced a work of exceptional value to students of social problems, as well as of agriculture, and of much public interest. In his Introduction he gives the following as subordinate considerations involved in the main problem, which, he says, is the manner in which the land may be made to produce an adequate food-supply for the rapidly growing population, while at the same time provision is made for such social and educational advantages as will induce the best of the people to remain in the open country:

1. A system of education suited to local conditions and to the every day experiences of country children, thus relating them to the opportunities surrounding them and developing their intellects through a reasonable agricultural and natural history outlook.

2. The adaptation of the education of the boy and girl, from fourteen to nineteen years of age, toward productive efficiency along agricultural and home-making lines.

3. The training of the adult farmer in methods of soil cultivation and farm management according to scientific principles, and the proper dissemination of the available knowledge on these subjects.

4. A serious consideration of the conditions of the farm home and the work that is carried on therein. Agriculture is a home industry, and the work of the woman plays a more important part than in any other industry. The drift from the country to the city is influenced greatly by the conditions of the farm home.

5. The development of sound business methods in all farming operations and the establishment of cooperative methods of farming, distribution of products, and buying of supplies. This entails consideration of the means by which the farmer may fairly obtain money for the extension of his operations.

6. An understanding of the social and economic advantages of good roads and other methods of transportation.

7. A re-vitalization and re-direction of country life in order that the higher aspirations of farmers may find their satisfaction in the richer life that the country may be made to offer.

These are the problems which Mr. Leake deals with in the 248 pages which follow. Commencing with an itemized historical review of the progress of agriculture he outlines the conditions of rural life, and, in succeeding chapters, treats of the rural school and early agricultural education in their main phases. He follows with attention to the secondary and higher forms of agricultural study. Chapters are devoted to extension service, Farmers' Institutes, the Woman on the Farm and the Training of Teachers. "The Example of Denmark" is quoted in conclusion.

NOTES

On the majority of farms little attention is paid to the conserving of time and energy in the conducting of the farm work. Farmers often send to the fields two two-horse outfits which require two men to operate them, when one man could drive the four horses and plough two furrows as well as one, or could join the two sets of harrows and perform the work which formerly required two men. On one of the farms, by thus combining the implements, one lad drove four horses hitched to the roller, behind which were attached the harrows, and in this way covered 22 acres in one day, performing at one time the two operations of rolling and harrowing.—F. C. Nunnick, Agriculturist, Commission of Conservation.

A number of the high schools in the United States have adopted the plan of planting class trees. The object of this movement is to develop in the minds of the graduates a feeling of civic pride and public interest. In St. Louis, the December graduating classes planted their trees in January while the June classes used Arbor-Day for their celebration. An aluminum tablet is placed on each tree bearing the month and year of the graduation being celebrated. The planting is accompanied by a programme consisting of the reading of an essay on the class tree, the delivering of addresses by public officials and the singing of suitable songs.

The following paragraph is taken from a letter on "The Saskatchewan Grain Growers' Patriotic Acre Fund" published in the October number of *The Saskatchewan Farmer*:—

"A week or two ago, we received four books totalling forty forms, each of which, with one exception, is filled in by a native of eastern-central Europe. The one exception is a Scotchman. Of the other thirty-nine, twenty-one are Austrians, fourteen Roumanians, one Servian, one Hungarian, one Russian, and one whose nationality is not stated. One Austrian and one Roumanian have promised contributions of two acres each. Several of the number are hired men who are making contributions from their wages varying from \$2.50 to \$10.00, while two others, natives of Roumania and Servia, are poor men, who have only thirty acres each in crop, and yet they are each contributing one acre to the Fund. From another district we have received two books in which all but two of the contributors are Scandinavians, while from many points come forms filled in by German-speaking people, and men of other nationalities."

The appointment is announced of Mr. George Batho as editor of the Publications Branch of the Manitoba Department of Agriculture. Mr. Batho for the last twelve years has been editor of *The Nor'West Farmer*.

It is estimated that of the wheat crop of the three prairie provinces for this year 246,000,000 bushels will be available for export. This is sufficient to make 56,571,421 barrels of flour, sufficient for 9,889,998,675 loaves of bread of 24 ozs. each: which would provide one loaf for each day for a whole year to 27,123,284 people.

In the United States more and more attention is being given to instruction in agriculture in the high schools of rural communities. This instruction is not limited, however, to rural districts. Cedar Rapids, Iowa, has a school farm on which experimental work is carried on as a part of the high-school work, with the cooperation of the State agricultural college at Ames. Indianapolis has a farm of 76 acres, with orchard, tillable fields, and forest which is utilized by classes of the Technical High School. Cleveland, Ohio, is another large city in which success has been achieved in the teaching of agriculture. Kingston, N.Y., high school has an 8-acre field, part of which will be used for instruction in intensive agriculture; in San Jose, Cal.,

an orchard and farm have been rented, where students can supplement their laboratory work with practical work in the field. Duluth reports an agricultural course in the high school which is valuable and popular. Decatur, Youngstown and Oklahoma City are considering the purchase of school farms. St. Louis has placed all its school gardens under the care of a supervisor. In Elmira, N.Y., achievement clubs (for city and county) are carried on with the cooperation of Cornell University and the United States Department of Agriculture. They encourage achievement in agriculture and domestic work.

In spite of the comparatively poor grain crop in 1914, the president of the Grain Growers' Grain Company, whose headquarters are at Winnipeg, Man., at the recent annual meeting was able to announce the most successful year the company has known. Nearly 500 farmer shareholders were present at the meeting. The net profits on the year's transactions were placed at \$226,963.08. A dividend of 10 per cent, requiring \$80,000, was paid and \$139,000 was transferred to the reserve fund, which now amounts to \$340,000. The total paid up capital of the company at present is \$867,422, being an increase for the year of \$86,000. The volume of grain handled last year was 18,821,042 bushels. The Grain Growers' Export Co., of which the Grain Growers' Grain Co. is the controlling stockholder, made a profit of \$351,000.

The Saskatchewan Department of Agriculture has issued a warning against Egyptian wheat. It gives two sketches of the wheat, in ear and in plant, and says "The above is an illustration of the variety of wheat variously known as Egyptian King, Alaska Wonder, Many Headed, or Mummy Wheat, which has often been foisted upon the public as a new and valuable variety. In reality it is an old and inferior sort, of absolutely no value for milling purposes and grown only for feed.

"Reports are current that agents, telling wonderful stories of the productivity of this grain, are taking orders for it in various sections of the Province. The farming community is hereby warned that it is not wise to waste money experimenting with this old variety, which has long since outlived its usefulness. Were it not for its unusual appearance, few, if any, would be deceived into purchasing it, but it is wise to remember that, in this case at least, 'appearances are deceptive.'"

A correspondent writing from Surrey, England, to *The Breeders' Gazette*, says: "Pedigree stock is booming in Britain, a curious situation surely in war times. Beef Shorthorns are going like hot rolls on a cold and frosty morning, averaging around \$445 for just-so-so stock. Milking Shorthorns are selling at \$250 averages. Devon cattle are reaching such prices as \$525 for single specimens and South Devons are soaring up to \$535 apiece. Border Leicester sheep are being boosted in counties where the Shropshire breed has long held sway; Lincoln and Leicester sheep are realizing high prices in the Yorkshire wold country; Kent sheep are going out in large numbers to South America and East Africa, and generally speaking things are humming—perhaps throbbing."

The Saskatchewan Department of Agriculture will operate a Poultry Killing and Marketing Station, under the joint direction of the Poultry Husbandry Section of the College of Agriculture and the Cooperative Organization Branch of the Department of Agriculture, at Saskatoon from December 5 to December 18. Poultry producers in the territory tributary to Saskatoon have been invited to ship their live birds to this Station, where experts from the Poultry Husbandry Department will supervise the killing, dressing, grading and packing of chickens, turkeys, ducks and geese. The Cooperative Organization Branch will undertake delivery of the dressed birds and will forward advance payments to the producers at graded prices. The poultry will be either sold immediately or be placed in storage until a satisfactory price can be obtained. When all of the birds have been disposed of a final payment

will be sent the producers, returning to them every cent that has been realized from the sale, less the cost of transportation, killing, boxing and storage.

The community planning spirit is rapidly developing in many parts of this continent. It has reached an advanced stage in the state of Massachusetts. This work is being fostered by the State Agricultural College through the extension service of which lecturers are supplied to districts desiring to hold community planning conferences. This movement has taken a firm hold on many rural communities in the state and individual counties are undertaking very ambitious conferences in which the people get together in a hearty way to plan for city, town and county progress. The programmes of the conferences for Essex and Hampshire counties, each of which occupied two days in the spring of 1915, fairly represent the work that is going on throughout the state. In addition to speakers provided by the Agricultural College the following organizations cooperated in making the movement a success: The Bureau of Statistics, The Society for the Prevention of Cruelty to Children, The Homestead Commission, The Young Men's Christian Association, The Department of Health, The Board of Education, The Board of Agriculture, The Highway Commission and the Federation of Women's Clubs. Each of these organizations took charge of a section of the proceedings. A conference in Hampshire county was held in Smith's Agricultural School, while that for Essex County was carried on in the Court House in the town of Salem.

Aristotle (82-22 B.C.) appreciated the importance of agriculture. This is what he wrote:—

"The first attention should be paid to that which is in accordance with nature: for by nature agriculture is first; next come all those things which are derived from the earth, such as mining and other arts of like kind. But agriculture should be ranked first because it is just: for it does not deprive its profits from men, either with their consent, like petty traffic and the mercenary arts, or without their consent, like the arts which pertain to war. Further, also, agriculture is natural, for naturally every existing thing derives its nourishment from its mother, and so consequently men derive it from the earth. Moreover, it contributes much towards fortitude: for it does not make the body unserviceable, like the illiberal arts, but renders it fit to live and labour in the open air, and to run the risk of war against assailants. For husbandmen are the only persons whose possessions lie outside city walls."

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